S. HRG. 99-11

THE ECONOMIC IMPLICATIONS OF LOCATING A NUCLEAR WASTE REPOSITORY IN TEXAS

HEARING

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

NINETY-NINTH CONGRESS

FIRST SESSION

FEBRUARY 11, 1985—HEREFORD, TX

Printed for the use of the Committee on Environment and Public Works

U.S. GOVERNMENT PRINTING OFFICE

45-432 O WASHINGTON : 1985

S321-12.

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ROBERT T. STAFFORD, Vermont, *Chairman*

JOHN H. CHAFEE, Rhode Island
ALAN K. SIMPSON, Wyoming
JAMES ABDNOR, South Dakota
STEVE SYMMS, Idaho
GORDON J. HUMPHREY, New Hampshire
PETE V. DOMENICI, New Mexico
DAVE DURENBERGER, Minnesota

LLOYD BENTSEN, Texas
QUENTIN N. BURDICK, North Dakota
GARY HART, Colorado
DANIEL PATRICK MOYNIHAN, New York
GEORGE J. MITCHELL, Maine
MAX BAUCUS, Montana
FRANK R. LAUTENBERG, New Jersey

BAILEY GUARD, *Staff Director*
LEE O. FULLER, *Minority Staff Director*

SUBCOMMITTEE ON NUCLEAR REGULATION

ALAN K. SIMPSON, Wyoming, *Chairman*

PETE V. DOMENICI, New Mexico
STEVE SYMMS, Idaho

GARY HART, Colorado
DANIEL PATRICK MOYNIHAN, New York

CONTENTS

	Page
Bentsen, Hon. Lloyd, U.S. Senator from the State of Texas, opening statement of	1

WITNESSES

Boulter, Hon. Beau, a Representative in Congress from the State of Texas, presented by Janette Taylor	20
Carroll, Ken, representing Hon. Larry Combest, a Representative in Congress from the State of Texas	22
Ford, Frank, chairman of the board, Arrowhead Mills	30
Hightower, Jim, commissioner of agriculture, State of Texas	14
Written statement	129
Jones, Calvin, agricultural manager, Holly Sugar Corp	28
Parris, Jim, representing Hon. John Smithee, Texas State representative	21
Purcell, William, Associated Director, Office of Civilian Radioactive Waste Management, Department of Energy	3
Written statement	35
Responses to additional questions	50
Richardson, Wayne, president, Richardson Seed Farms, representing Power, Inc	22
Written statement	139
Sarpalius, Hon. William, Texas State senator	19
White, Hon. Mark, Governor, State of Texas	8
Additional statements supplied for the record	146–171

THE ECONOMIC IMPLICATIONS OF LOCATING A NUCLEAR WASTE REPOSITORY IN TEXAS

MONDAY, FEBRUARY 11, 1985

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Hereford, TX.

The committee met at 3 p.m. in the Hereford High School Auditorium, Hereford, TX, Hon. Lloyd Bentsen, presiding.

OPENING STATEMENT OF HON. LLOYD BENTSEN, U.S. SENATOR FROM THE STATE OF TEXAS

Senator BENTSEN. This hearing will come to order. If you will please refrain from conversation so everyone can hear.

Let me welcome you, first, to the Senate Environment and Public Works Subcommittee on Nuclear Regulation field hearing on the subject of the Department of Energy's identification of an area in Deaf Smith County as one of the three preferred potential locations to store this Nation's spent nuclear fuel and high-level radioactive waste.

The Nuclear Waste Policy Act of 1982 states that one of the purposes of the act is, and I quote:

> . . . to establish a schedule for the siting, construction and operation of repositories that will provide a reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository.

The Department of Energy at this time is engaged in this process and the DOE announced in late December that based on preliminary draft environmental assessments, sites at Hansford, WA, Yucca Mountain, NV, and Deaf Smith County, TX, are three preferred sites to undergo extensive testing.

In enacting the Nuclear Waste Policy Act, Congress recognized the need for a secure and isolated repository to accept up to 3,000 metric tons of uranium equivalent and to hold it safely for 10,000 years.

Because of the magnitude of this project and because with it this Nation is, in essence, engaged in new scientific engineering, a great number of safeguards were written into the process. Among these are studies of various potential effects. We are here today to examine the economic implications of a site in Deaf Smith County.

I want to say, frankly, that the reports I have received thus far lead me to oppose this siting and my concerns based on these re-

ports fall into two general categories which are very closely related.

First, of course, and the biggest one, is it safe?

Would it be safe when it's opened and would it remain safe for future generations in the absence of active human management?

In that regard, I, and a great number of persons throughout the country, question whether such a repository should be situated directly under the Ogallala Aquifer, which is the principal source of fresh water in the southern high plains.

DOE studies seem to indicate that the potential for surface and ground water contamination is of extreme importance in determining any particular site, thus it is at this point beyond understanding that the DOE would consider burying radioactive material near—and apparently moving it through—a source of water absolutely critical to the people of this area and to the agricultural needs of this Nation.

I have some other concerns relating to the effects of unearthed salt on the aquifer and agriculture but I want to proceed on the problem that I hope will be addressed in this hearing: The effects upon the economy and specifically upon the rich agricultural production for which this area is known. I want to emphasize that I do not mean only in the event of an actual leakage from the repository. I'm speaking of the economic effects of having it buried out here in this garden.

This part of Texas has been described as a green island in a vast sea of arid grazing land. According to the Texas Nuclear Waste Study, Crop Reporting District No. 1, which includes this fertile area, produces 70 percent of the State's corn, 54 percent of our cotton, 47 percent of the wheat and holds 29 percent of our livestock value.

Deaf Smith County is No. 2 in this State in livestock and crop receipts; 1982 receipts totaled $239 million. An estimated 85 to 90 percent of the world's hybrid sorghum seed comes from Deaf Smith, Swisher, and surrounding counties.

Food stores across this Nation proudly display products labeled "Deaf Smith County" and many find ingredients in other products originate here. I am concerned about the future of these sales if a nuclear repository is placed nearby.

I have already seen reports in the press that important commercial operations would consider relocating to other areas if this county is chosen for a repository. I want to explore some of those concerns here today.

It seems to me at the outset of this hearing that somewhere in this vast Nation, far from the Panhandle and far from Texas, there must be a more suitable location. If the siting process is such that one of the three prime sites is a productive populated area of national importance then I question the process.

There have also been statements in the press that the repository will not be built where it is not wanted and the evidence I see to date indicates it is not wanted here.

But if this county is recommended and the selection is presented to the President or if it ultimately reaches Congress for resolution, the oral and written testimony from this hearing is going to be a very valuable tool in reaching a final decision.

I regret that we are unable to hear from everyone because of the time constraints that we are under, and I am going to ask everyone to make their presentations as brief as possible.

But I must say in an aside, I'm told that in the other two States, both of which have Federal lands involved, and the State of Washington in particular, which has waste sites now of high toxicity and low toxicity, where I understand we have the development also of nuclear weapons, I understand that there the local people, having already those kinds of problems, are ready to accept this site.

Now, if that's the case and if the people here don't want it, frankly, I don't know why we don't put it there.

The Governor is en route and is supposed to be arriving momentarily and we will, of course, hear him as soon as he arrives, but I would like to now present as our first witness, the Honorable Jim Hightower, Commissioner of Agriculture.

Well, they tell me his plane is on the way, too.

Well, we will start with the Department of Energy.

Mr. William Purcell, the Associate Director with the Office of Civilian Radioactive Waste Management.

Director Purcell, we are pleased to have you.

STATEMENT OF WILLIAM PURCELL, ASSOCIATED DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT, DEPARTMENT OF ENERGY

Mr. PURCELL. Thank you, Senator. It's a privilege to be here.

Mr. Chairman and members of the subcommittee.

I appreciate this opportunity to provide the subcommittee with information on the potential economic impacts of the Department of Energy's proposed activities in Texas and the efforts the Department is making to determine the extent of such impacts and ways of minimizing their negative effects.

With me today and to my right is Mr. Barry Gale of our Washington, DC office, and to my left is Ted Taylor, an economist with our Columbus, OH office.

I am Associate Director of the Office of Civilian Radioactive Waste Management in Washington, DC.

It is especially gratifying to be here this afternoon, Mr. Chairman, to provide testimony to the subcommittee and to answer questions inasmuch as we, in the Department of Energy, are in the midst of a very extensive public information effort as part of the public comment period on our draft environmental assessments.

Release of these documents is a very early step in a long process leading to the establishment of the Nation's first deep geologic repository.

As you know, Mr. Chairman, formal recommendation of three sites for detailed study will not occur until late this summer. Approval of one of these sites for the repository will not occur until 5 to 6 years later, about 1991. The repository would not being operation until close to the turn of the century following a very lengthy public licensing process in 1998.

Between now and the year 1998, no high-level radioactive waste or spent fuel will be emplaced in any repository site. Throughout this lengthy processing period, we in the Department are commit-

ted to full and open participation by affected interested parties and full implementation of the provisions of the Nuclear Waste Policy Act.

During the last 2 weeks in January of this year, some 50 briefings were held for interested State and local officials, Indian tribes and the public in the six States in which potentially acceptable sites for the first repository have been named. Over 3,000 people attended these briefings.

In the near future, we will be holding 18 public hearings in the affected States to formally receive comments on these important documents. These will be in addition to the written comments we expect to receive during the public comment period as a result of the distribution of thousands of copies of these environmental assessments.

We realize the importance of the issues addressed in these documents to all affected parties and we are determined to make every possible effort to reach out to as many individuals and groups as possible to answer questions concerning our program.

I have a written statement, Mr. Chairman, which I wish to submit for the public record. (See p. 35.) It provides a detailed, summary response to your questions concerning potential economic impacts and the Department of Energy plans to help mitigate those impacts, with special emphasis on your concerns regarding the possible contamination of the Ogallala Aquifer and potential impacts on this region's rich agricultural industries. More detailed information on potential socioeconomic impacts is contained in the draft environmental assessments.

Since there is little time available, I would like to take just a few moments to summarize the major points from the written statement.

First, with regard to the Ogallala Aquifer. The underground workings of the repository would be located approximately 2,500 feet below ground surface. This is about 2,100 feet from the base of the Ogallala and 1,500 feet below the base of the Dockum group.

This relationship is shown in the chart behind you, Mr. Chairman.

The Ogallala and the Santa Rosa members of the Dockum are the two major fresh water sources in the area. A deep saline aquifer, called the Wolfcamp, is below the host rock. The pressures in the various aquifers result in a downward gradient across the host rock. This means that if release were to occur from the repository, it would be away from the Ogallala and the Dockum and in the direction of the Wolfcamp Aquifer.

Now, boreholes and shafts are the only likely leak path from the Ogallala to the host rock. These holes and shafts will have several seals at various steps to eliminate hydraulic connection between the aquifer and the host rock.

Senator BENSTEN. If I might, I would like to get some continuity in questioning here. I would like to get a feel for the size of those borings that will be thrust through the aquifer, down to the depths that you are speaking of.

It is not something like we would see in the casing of an oil well at all. We are talking about something of much greater magnitude, aren't we?

Mr. PURCELL. That's right, Mr. Chairman. In our environmental assessment, we talk about a shaft of 22 feet in diameter; and a second one of, I believe it's 12 feet in diameter.

Those aren't final diameters, we are in the process of determining what is the optimum size of a shaft.

But you're right, sir, they are fairly large shafts.

Since water levels in the Ogallala are about 300 feet below ground surface, any surface spill or accident will not immediately come in contact with ground water. This would allow clean up to be performed without any contamination of the aquifer. Either of these conditions, a surface spill or release from the repository, are very unlikely events.

Prior to any significant work on the site, a series of monitoring wells will be installed. These monitoring wells will be situated to detect any changes in the aquifer caused by the exploratory shaft or other activities at the site. All mud pits and salt storage facilities will be lined and monitored for leakage. Salt storage piles will have retention ponds to contain runoff from precipitation. The runoff will be evaporated or disposed of in State-licensed disposal facilities.

We feel that necessary precautions will be taken in order to prevent any possible contamination of the aquifers in the area.

Regarding possible deleterious impacts on the region's agricultural industries, we recognize that the public perception that products might be contaminated, even if they are completely safe to consume, could influence the decision of consumers though it seems clear that for agricultural goods that are produced and specifically identified with the region, there could be a short term impact on consumer attitudes for products that lack the regional identity which is true for most of the products grown in the Panhandle region, consumer attitudes might not change as a result of a repository.

We address these concerns in our draft environmental assessment and they will be further addressed during site characterization. We are committed to working with local, State, and affected parties to develop plans and programs to mitigate these effects.

Although there could be some negative consumer reaction to regionally identified products at first, repository operation will not begin until 1998 and we feel that as site characterization proceeds and later as construction and operation of the repository moves ahead, negative attitudes will dissipate as safe operation establishes a positive record of site characterization and repository activities.

The best antidote to fear, in our opinion, is a record of safe operation to which the Department, as well as the Environmental Protection Agency and the Nuclear Regulatory Commission, the agencies that regulate us, are firmly committed.

We are acutely aware of the concerns raised regarding the aquifers in the area and the deleterious economic impacts that some feel the mere threat of contamination poses for this area's agricultural industries.

We recognize that these are problems of deep concern and we will be looking closely at them during the next several years.

Between now and the end of site characterization, some 4 to 5 years down the road, detailed studies will be conducted focusing on, among other things, potential environmental and socioeconomic impacts, including the issues identified above.

If during the course of these studies or following their completion, a site is deemed unsuitable in accordance with our siting guidelines, it will be eliminated from further consideration as a potential repository site.

The Department of Energy will not recommend any site for development as a repository it does not have full confidence in.

The Nuclear Regulatory Commission will not approve any licensing application for the Department that it feels is flawed in anyway.

We feel that over the next several years of further study we will be able to establish the safety of a deep geologic repository as well as provide ample evidence that the fears associated with the development of a repository are transitory in nature and should have no lasting or permanent effect on the economy of a region.

As you know, Mr. Chairman, following recommendation by the Department of one site for the development of a repository, a State may choose to issue a notice of disapproval concerning the recommendation. Such a notice would effectively veto further investigations of a repository in that State unless such a notice is overridden by a joint resolution of both Houses of Congress.

Therefore, a State always has recourse to that statutory mechanism to prevent construction of the repository within its boundaries if it remains unconvinced about its acceptability.

Finally, regarding the potential economic impact that might be associated with the Department's proposed activities in Texas, I wish to point out the following: Site characterization activities locally on site will cost about $270 million over a 4- to 5-year period. Some of this will be spent in the local area. Overall costs will be more than a half a billion dollars for the total characterization program for each site.

Senator BENTSEN. Let me interrupt you at that point.

Mr. PURCELL. Surely.

Senator BENTSEN. Let's suppose it became quite evident that a State was opposing the location of such a site, or the characterization of it, and it was obvious it was going to be vetoed, and you're talking about spending a half a billion dollars on each of these sites in the study.

Mr. PURCELL. That's right. [Interruption by applause.]

Senator BENTSEN. Would you please hold down the demonstration so we can pursue this? We have limited time and I want to give these gentlemen and the other witnesses from the area full opportunity to discuss their view point.

If that became apparent, would you consider calling off the process and the additional expenditures of the tax payers money?

Mr. PURCELL. Senator, we are, as you know, governed by the act which requires that we identify three sites for characterization. And we are governed by the guidelines that have been developed under the act.

These guidelines were developed over a period of 2 years with active participation from many groups, specialists, all types of

people. These guidelines are really the criteria that we're using for site selection and we are obligated by law to proceed down that course of action.

There is opportunity for a different solution, as I outlined before and as you are aware, when we get to the point of recommending a single site. But in the interim, we are obligated to follow the law.

Senator BENTSEN. Please proceed.

Mr. PURCELL. All right. Site characterization would employ a peak work force of about 360 people and about 180 additional indirect jobs would be created; 10 to 25 percent of the site labor force we would expect to come from the local area. A hundred percent of the indirect jobs, we would expect, could be filled by local residents.

Senator BENTSEN. Some agricultural lands would be displaced from production. It would be less than six-tenths of a percent of all the agricultural land in Deaf Smith County.

The Department will pay grants equivalent to taxes to States and units of local government with taxing authority over the site.

Further, if a repository were to be constructed at Deaf Smith, the social and economic impacts would be similar but much greater in magnitude. They would be the subject of a very detailed analysis in the environmental impact statement which we are required to generate under the act.

Construction costs of a repository are estimated to be $1.6 billion and operating costs would amount to about $3.7 billion over a 26-year period.

As in the case of site characterization, DOE would continue to pay grants equivalent to taxes and, further, DOE would provide technical and financial assistance to communities affected by the repository development.

Both during site characterization and repository construction and operation, the Department will assist State and local officials to help assess potential impacts and to prepare for their mitigation.

Environmental and socioeconomic field plans will be prepared with the assistance of affected parties to monitor activities during site characterization in order to help prevent problems before they develop. The draft environmental assessment identifies what we feel to be potential problems. We would like to work with communities, States, and others effected by the program to develop site specific mitigation plans in order to address these problems.

Senator BENTSEN. I apologize to you, Mr. Purcell, but the Governor has flown out specifically to testify. The legislature is in session back in Austin and he feels it's important that he be there as much as he can.

Mr. PURCELL. I'm sure.

Senator BENTSEN. If we could interrupt at this point and let the Governor make his statement.

Mr. PURCELL. All right, fine. I had just about completed my statement, Mr. Chairman, and will be available for questions after the Governor makes his statement.

Senator BENTSEN. I appreciate that very much.

Mr. PURCELL. Thank you.

Senator BENTSEN. I understand that the Governor has arrived.

Governor, we know of your deep concern and interest in this particular subject and we know of the demands on your time with the

items before the legislature and to have you fly over here and give your testimony to us is much appreciated.

If you will proceed.

STATEMENT OF HON. MARK WHITE, GOVERNOR, STATE OF TEXAS

Governor WHITE. Thank you very much, Senator Bentsen. First of all, I would like to commend you for your having a hearing associated with this most important deliberation that the Federal Government and the Department of Energy is undertaking.

I would also like to commend you on providing leadership at the Federal level for State programs. One is an amendment that returns some eighty-five percent of all our highway tax dollars that we send to Washington back to Texas. I want to compliment you for literally hundreds of millions of dollars that will be returned to our communities across Texas providing better mobility and transportation.

The other thing, which those in this part of Texas are very aware of, is the windfall profits tax and the fact that you were able to, not only get small producer exemptions for our State independent producers and royalty owners, but also an exemption for the State of Texas which has meant literally hundreds of millions of dollars for our public schools and universities across Texas which helps us to hold down taxes in our State.

I know the people throughout Texas are proud of that. I want to mention that because, quite frankly, I'm proud of it and we won't have to raise taxes this year, because of your efforts and I congratulate you for it.

Generally, the U.S. Department of Energy high-level nuclear waste repository program and their investigators have paid very little attention to the extensive agricultural and other economic values of the area of Texas Panhandle that is being considered for waste disposal.

Despite the concerns of thousands of citizens and my own repeated statements of concern, the Department of Energy has persisted in continuing to defer detailed socioeconomic analysis of potential impacts of its program on the vast productivity in future economic potential of this area.

This disregard for our concern, I think, is unjustified. It is financially and emotionally damaging to the affected citizens, many of whom are third and fourth generation farmers and stewards of the land that was first broken by the plows of their ancestors.

Now we find that the DOE is again proposing to move ahead with a site screening decision that this time will make a Texas Panhandle site one of the top three candidates in the Nation for high-level nuclear waste disposal. Such incompatible and conflicting use of the State's and Nation's richest farm land cannot be reconciled by any rational plan that purports to serve the broad interests of the Nation.

I feel compelled to recall for you, Senator Bentsen, and members of this committee, a portion of my statement to the DOE on May 18, 1983, when the department held public hearings premature in the obvious sequence in schedule of the Nuclear Waste Policy Act

seeking comment on the proposed nomination of a Texas repository site and soliciting recommendations with respect to issues that should be addressed in the required environmental assessments for the nomination of such sites.

I say premature because, as I informed the DOE, it is without reason that they should propose to nominate sites without benefit of final siting criteria which were not finalized until a year and a half later and that the public could not fulfill its responsibility under the act to identify relevant issues for the environmental assessments without first knowing the siting criteria to be applied.

In the testimony of May 18, I stated that,

> The relevant socioeconomic issues in the Texas Panhandle region have not been comprehensively identified and little has been done to address the issues that have been identified. A major factor in the economic and social well-being of the residents of Deaf Smith and Swisher Counties is the quantity and quality of underground water in the Ogallala, and in the underlying Santa Rosa Aquafer.
>
> The Ogallala is the major resource for irrigation for agricultural production. Swisher and Deaf Smith Counties are among the ten most productive agricultural counties in Texas. It is imperative that the DOE activities relative to repository site selection or development not disrupt this valuable asset of the State or the limited resources on which it depends. Because of the physically isolated nature of the Ogallala Aquafer under the southern high plains, the water resource it contains is a limited and finite resource of vast but unique local value. Any environmental assessment must take full account of that value in an analysis of potential impacts at all phases of the program.

Our preliminary review of the environmental assessments for Texas sites indicates that nothing has changed in the DOE's approach. The issues remain the same. That data base has not improved. The environmental assessments are filled with subjective judgment regarding potential impacts of both site characterization and repository activities. Assertions without substantiations regarding the ability to protect these unique underground water sources and contradictions regarding the importance of avoiding disruption of the agricultural sector which is primary to the local economy.

Let me cite an example: The first one on page 7-83 and I quote:

> The agricultural sector of the economy in the area of Deaf Smith site could be disrupted if the repository adversely affects the marketability of agricultural products. The potential adverse affects though are expected to be small and will be offset by the expected benefits to other part of the agricultural sectors.

On page 7-85:

> Although disruption of the agriculture is a primary sector of the regional economy, the site is ranked fourth (for socioeconomic considerations among the five sites DOE prefers nationally).

We note that Davis Canyon, UT is ranked fifth because, "a sizable impact mitigation program would be required to offset disruptions in community services and housing." Socioeconomic considerations; however, carry only about 5 percent of the weight in the overall ranking scheme developed under the DOE's Site Recommendation Guidelines.

Is disruption of the agricultural industry expected or not by the DOE? We certainly expect it and already see examples of it taking place on the form of declining land values in and around the sites to the reported extent of about 30 percent. Land sales and purchases have been disrupted and wide spread uncertainty exists re-

garding farm investments and improvements because of the long period of uncertainty regarding the exact location of the proposed sites which resulted in keeping some 500 square miles of land jeopardy of near future condemnation by the Federal Government.

Even with the selection of a single 9-square-mile site for characterization. The uncertainty regarding the future of this and surrounding lands will remain for at least 5 years until a repository selection is made.

What are the DOE's expected offsetting benefits to other parts of the agricultural sectors that they talked about? We can't find any. We certainly can't think of any.

Is the potential risk of disruption of the agricultural sector of the economy in the affected area of Texas a lesser concern to the DOE than the cost to the repository program of mitigating disruption of community services and housing near Davis Canyon, UT? It is also recognized that there would be some necessary level of similar mitigation of social disruption in the Texas area as well. We don't find any information that would confirm this judgment on the part of DOE.

Further, it has been recognized and admitted approach of the DOE for a number of years to defer the types of data collection necessary to substantiate any such judgment until after three sites are selected for site characterization from which one will, according to DOE, be selected as the repository site.

I'm sure you will hear considerably more about the value of the agricultural economy and the importance of underground water supplies in the effected areas from Commissioner Hightower's testimony and that of other witnesses. But I must point out to you here that the DOE has been negligent in its evaluation of both of these most critical concerns for the people to Texas.

I have already made some mention of the DOE's approach regarding the importance of agriculture of the area and to the State. This importance is directly linked to the matter of whether the quality and quantity of available underground water can be adequately protected to assure the continued viable economic future of the area as a significant contributor to the Nation's current and future food and fiber needs.

I think it's ironic that this issue would arise here and now, literally, in the Nation's breadbasket when the economics of farming throughout the Nation are so precarious. It is also ironic that this DOE program should be so insensitive to the fundamental value of a major reservoir of high quality ground water at a time when the Nation is finally becoming acutely aware of the need to conserve and protect such natural resources that are, literally, the life blood of our civilization.

The DOE program asserts that its water requirements for site characterization and repository activities are not inordinate relative to past irrigation uses on equivalent amounts of land. This does not take into account first, that agricultural water conservation measures have greatly advanced during the past 5 years and we owe much to the credit of our farmers and water managers likely continue on this vigorous trend in future years.

And second, that the DOE's own water requirement projections for its own activities are based only on conceptual plans which we

must view representing minimum requirements. Additionally and possibly most important, the impact of even the minimum water withdrawals by the DOE program has not been fully evaluated with respect to on site adjacent and surrounding holders of valid water rights and commitments. Nor has it been clearly evaluated with respect to existing regulatory and management policies.

The DOE's ability to protect the ground water from both radioactive and nonradioactive contamination is at this time merely an assertion on its part from two standpoints.

First, much of the technology for both short and long term shaft and repository ceiling is untried. And in some cases unknown without large scale experimentation.

Second, without the existence of a final necessary U.S. Environmental Protection Agency rule regarding the standards for ground water protection, it escapes me how the DOE can believe or expect us to believe that adequate protection is achievable under the circumstances. Which again, are not even reasonably understood at the proposed are in the Texas Panhandle.

We cannot accept such unknown risks at this critical stage of the national site screening when the health of our citizens is at stake as well as the fragile marketability of our crops which is subject to both real and perceived risks of being contaiminated. As you are aware, our biggest cash crop in Texas, above the very substantial agricultural production, is oil and gas. Oil and gas exploration and development has been slow in the Palo Duro basin interior in which the DOE proposes its site.

But recently there has been in increasing interest in exploration in the area as a result of both market factors and some encouraging results, especially north of Deaf Smith County site and Oldham County. No DOE repository program activity should serve to preclude or even chill, as we have indication it has, oil and gas exploration and the development at this time when our national, State, and local economy is so tied to this energy resource.

The DOE asserts that oil and gas potential is low in the area of their investigations relative to the very productive fields to the north and to the south. This is not to say it is low on an absolute scale; however, as the DOE asserts that it is at other sites under investigation around the Nation.

Any lost production or exploration opportunity in Texas is an economic loss to the people of Texas when the necessities of other overriding policies do not dictate that the opportunity should be foregone.

In closing, I would like to make clear that the people of this area have already been and continue to be subjected to unaccounted and unnecessary costs associated with the DOE Nuclear Waste Repository Program. The lingering uncertainty regarding the future of their lands and the primary use of those lands has done untold financial and emotional damage.

The vague DOE assertions and assurances against future risks to their way of life and to their very livelihoods are unjust and inexcusable given the time the Federal Government has taken to come to grips with the problem of safe high-level nuclear waste disposal.

The DOE's assumptions at this time that the unknown and poorly evaluated risk in damages of a repository here can be suffi-

ciently mitigated or totally unsubstantiated. The nature of the socioeconomic problem surrounding site characterization and the repository development in the Texas Pahnandle lead to the great likelihood that the problems cannot be safely or equitably resolved.

This, I think, casts doubt on the wisdom of DOE trying to justify an expenditure of $500 million to up to $1 billion for a site characterization. Only later to have the site rejected in favor of one that enjoys both the local support of a host community and a greater possibility of being both socially and economically acceptable and technically licensable.

Surely this expensive, poorly conceived and even more poorly substantiated intrusion on the most productive farmers and farmlands and most valuable underground water in Texas can soon come to an end.

In just the brief moments that I had to review the prepared statement of my predecessor at this microphone, raises deep concerns; on the one hand talking about the vast economic benefits that will accrue to the community and at the other talking about the rather slight impacts that will occur in the community.

I would like to see nuclear power completed in an economical fashion, so that we can get the benefit from low cost electrical energy for all of our people and our industry but to think that we have established a program that generates waste that, to this date, we do not know what to do with, is astounding.

I don't think that we would have undertaken it had we ever thought that it would be such a terrible problem, but let me point out exactly what they're doing with the digging of this vast well. This vast drilling effort that they're going to be making, and, by the way, they're also going to be creating some waste as a result of that drilling that they do not know what to do with. That is the salt that will be extracted from that hole in the earth which will amount to 25 million tons.

And they haven't figured out what they're going to do with it. We are talking about 25 million tons of salt. Some fast arithmetic would put salt 1 foot deep over three sections, or if they want to stack it thinner than that, it would be 1 inch over 36 square miles, or it would be one football field 1,500 feet high, and DOE said in their statement that all mud pits and salt storage facilities will be lined and monitored for leakage. Salt storage piles will have retention ponds to contain runoff from precipitation. The runoff will be evaporated or disposed of in a licensed disposal facility.

Now, I am not from west Texas. But I have been a frequent visitor to west Texas and have worked with the legislature in trying to draft a water plan that will help the people in west Texas, precipitation is not the biggest fear you might have from that salt. I would suggest having been to west Texas on more than one occasion, having it blown all across west Texas might be the biggest fear you have.

I don't know if there is any reasonable antidote in agriculture for having salt in your field but that last time I looked, not being a farmer, salt was not going to increase productivity. And if we can come to some resolution of that, I think then, maybe, it might lend some reasonable credence to their arguments that they do know

what they are doing. And until they do that, I don't believe they know what they are doing, Senator. Thank you very much.

I'll try to respond to any of your questions.

Senator BENTSEN. Governor, we are most appreciative of your testimony; it is excellent, persuasive. But in that testimony, you criticize the DOE's site selection process.

What one thing do you think should be done to try to improve that site selection process?

Governor WHITE. I think, first of all, Senator, that we ought to have a scientific determination of what would constitute a safe place for the location of high-level nuclear waste.

If the scientists don't know where it can be safely stored, then I don't know who else would.

Certainly not a lawyer; I'm not going to say where it would be. But it appears to me, Senator, that they have gone through this whole process of, first of all, trying to find a place for it and then trying to prove that it will be safe.

If they would set these standards first before they select the sites, I think we would be better served. And so far they have done it backward. They have always found a site first and then backed up, as they are doing right here; they are saying it in their own testimony, Senator. I think it is not even cleverly disguised.

DOE talks about necessary precautions will be taken in order to prevent any possible contamination of the Ogallala and other aquifers.

They say that now that we're here, we think we can do all the things necessary to give you protection. They should be able to show you that before they come. Not after they drill.

They say that now that we're here, we think we can do all the things necessary to give you protection. They should be able to show you that before they come. Not after they drill.

They are creating a new technology and there is absolutely no certainty that they will be able to produce that protection. And yet, they will have already spent that money that we are so worried about.

Senator BENTSEN. Governor, one of the other problems that we run into is the incredible burden on the State in trying to approve or disapprove of this kind of selection-site process in trying to develop the kind of information that is necessary. I noted that the State of Nevada has sued the DOE for funds to conduct its own investigation of a proposed site in order to decide whether to approve or reject the DOE findings.

Do you support that kind of approach; that kind of suit for the payment of funds for that purpose?

Governor WHITE. Well, first of all, I think it's regrettable that we, in this country, have to enter into an adversarial position in the courthouse with an agency that is designed to give protection to the people.

We're paying for the protection twice. I find it expensive enough just paying for it once. I would like to think that we would have the trust and confidence in the process and in the development of that process that they will lay out the parameters first and then we can all say, yes, if we will follow all these parameters, we will have a safe disposal facility.

Then I don't think you would find the resentment and the resistance that you find across this country from a predisposition to find the site and then try to justify it scientifically.

But in the alternative—if forced to do so certainly—I think that the States are entitled to some funding because we, frankly, are burdened by a lack of information on our part to disprove some things that they have spent hundreds of millions of dollars trying to support and substantiate.

We do have litigation filed at this time in the fifth circuit, not directly on that issue, but related to the process that's been undertaken.

Senator BENTSEN. Governor, I know the pressures on your time, and what lengths you had to go to come here with the legislature in session and all the concerns of the legislative calendar and the budget process.

I appreciate your testimony, it is most helpful to us and we are pleased to have had you appear.

I understand your necessity of returning to Austin.

I want to thank you very much for coming.

Governor WHITE. Thank you very much, Senator.

Senator BENTSEN. Our next witness will be Hon. Jim Hightower, Commissioner of Agriculture.

Commissioner, you may proceed.

STATEMENT OF JIM HIGHTOWER, COMMISSIONER OF AGRICULTURE, STATE OF TEXAS

Mr. HIGHTOWER. Thank you, Senator Bentsen, for this opportunity to appear. I apologize for being a bit late. We had a headwind blowing about as hard as the Department of Energy press release against us as we headed out here, so it held us up a little bit, but we did want to come over here and visit with you, and express to you our appreciation for caring enough to bring a Washington focus to this fight that we're having to have with the Department of Energy.

I say having to have because this is not a battle of our making. It is not a battle that we want to be making. In fact, to a large degree, I think you will find that people in this area and all across Texas can't really believe that we're having to make this fight but it is of such fundamental importance—being pressed upon us with such a vengeance—that we're damn sure going to make the battle whether we want to or not.

I have prepared testimony that we will submit to you, I'm not going to read that. (See p. 129.)

Senator BENTSEN. Commissioner, we will take that as part of the public record and if you would summarize it please.

Mr. HIGHTOWER. I stress that the issue really is not a matter of geological formations. There's more at stake here than pretty salt domes. The issues, in my view, is a runaway bureaucracy that shows every sign of intending to run over the local citizens whether they want it or not.

Let me start with exhibit 1 which is the massive study, Draft Environmental Assessment of Deaf Smith County that the Department of Energy put together. Better than 1,000 pages. Yet only 10

pages of text in here deal with the economic impact that this dump would have on agriculture and then they conclude in this document that the impact would be slight, it would be negligible, it would not be substantial.

Anyone who knows anything about Texas history knows that Deaf Smith really wasn't deaf, but I'll tell you, he wasn't dumb either and neither are the people who are the heirs of Deaf Smith living in a county under his name, dumb. You don't need to be really brighter than a 20-watt lightbulb to figure out that if we try to bury nuclear waste under our food and our own water supply, that that's going to pose a contamination threat to both of those and most significantly, in terms of economics, it will reduce consumer confidence in the purity of our agricultural products out here.

This study is an amalgam of statistics, computer models, geohydrology data and other hocus-pocus that ignores some rather harsh economic realities that would be visited on the people of this area.

I think we've got a case here of a bunch of consultants who didn't want to get any manure on their Guccis and didn't want to tarnish some of their own preconceptions, so they didn't really come out here and talk to the businesspeople and talk to the farmers of this area.

If they had, they would have learned that the people in this area view this dump as an unmitigated economic disaster. We might be rubes, but we do know our business out here and we know better than to buy any bureaucratic assurances using words like slight and negligible and not substantial.

We know that even without a leak in this facility, for example, the public perception of food grown over nuclear waste is going to have an immediate and a long-term negative effect on agricultural sales.

We are talking here, of course, about farming country. Just pure and simple. From cotton to cattle, from sorghum to sugar beets, nearly $4 billion a year in agricultural sales in this area, a third of the total Texas cash receipts for crops and livestock.

But it is not just a matter of the quantity of food that's produced here, most significantly, in Deaf Smith County, we're talking about the quality of food. Quality that consumers count on, quality that's shipped all over the world and quality that is unique. You've got a company like Arrow Head Mills. You're going to hear from them. The largest producer and marketer of whole grains and oil, so committed to quality that they even put out a cookbook, natural foods for family kitchens. One of the major popcorn producers of organic popcorn. But I don't think the consumers are going to be that interested in organic popcorn that might pop you a little later on.

It would just simply have a negative impact on this company as a result.

Cactus Feeders of Dumas, TX, for example, they have recently taken the uncommon step of eliminating the use of antibiotics in their beef production because of consumer concern.

As the president of that company says, the quality of the food supply must be beyond question. He's talking about antibiotics much less than what the impact might be on that consumer perception with a nuclear dump here.

You're talking about an area that produces 15 percent of the beef that is consumed by the people of the United States. You've got companies like Frito-Lay and Holly Sugar and I understand you're going to hear from them. But also some small processors.

There's a tortilla factory in Hereford buying 500 million pounds of corn ever year in order to make tortillas and tortilla chips.

And again, the consumer issue is at stake there. Who wants a tortilla that might have that surprise ingredient in it over the long run.

You've got a vegetable packing shed in Hereford that ships 2,500 truck loads of onions, potatoes, lettuce, and carrots each year to super markets all over the United States. Why trade those 2,500 truck loads of good agricultural produce for 8,000 truck loads of radioactive waste.

And that's what's at stake. Not just food products but also the seed industry. The pure seed industry that is unique to this area that's going to be endangered.

You're going to hear from Richardson Seed Farms a little later. A unique resource to the State of Texas who are producing foundation wheat seed, not only to this State, but to six States. Yet this farm is located on and next to the Deaf Smith County site. Obviously this is going to have a negative impact on that farm but also the whole seed industry, 211 million pounds of seed are produced in this area annually, generating $126 million each year which is going to be endangered as a result.

Eighty-five percent of the world's sorghum seed shipped to Australia, to Europe, South America, all over the world, comes from this impact area.

So what I'm saying is all of this adds up to a very big problem for the Texas economy and it has ripples for the United States and the world economies as well.

The people in this area know this. The Department of Agriculture, along with the Governor's office, last year conducted a scientific opinion survey coordinated by Dr. Julie Brody, with me today, among farm operators. They had 564 respondents, and less than 10 percent of those respondents agreed with the Department of Energy's assertion that the dump is going to have no impact on farming. Four out of five of them think that a repository will make it harder to sell their crops and 84 percent of them think their land values will go down. More significantly, they're already being hurt.

Thirteen percent of the farmers already have postponed expansion plans and delayed maintenance work that they would have done on their farms. More than 100 of the 564 farmers responding say that they're planning to move if Deaf Smith County is chosen as a site, including families that have been farming in this area three and four generations.

These people also, not surprisingly, don't feel all that good about the way the Department of Energy has dealt with them.

Eighty-three percent of them said the Department of Energy site selection process is unfair. Sixty-three percent think that the Department of Energy could ruin their land and water during the test drilling, even before the final selection is made.

And 73 percent simply don't trust the Feds to build a repository that is safe.

In summary, this is one of America's best agriculture producing areas and a nuke dump would destroy the economic potential of this agricultural economy.

The best use of the land and water that is around here and of the population that uses that land and water is to feed people, not to store toxic waste. And the two are not compatible. The farmers of this area, the soil and this irreplaceable aquifer that we're over are natural resources that will produce for us and for future generations if we do not do something unutterably stupid as the Department of Energy is proposing here.

There is the old saying that haste makes waste; but it seems to me that in this case waste seems to be producing haste. Haste that is going to serve us very badly in the long run.

It's our responsibility to be good stewards of these resources.

So I just plead with you, and I know you come here on a factfinding mission, but I know something of your heart as well, don't let them dump on our farms and don't let them dump on the people of this area.

I will be happy to answer any questions.

Senator BENTSEN. Commissioner, your testimony is going to be very helpful to us. We're going to place your testimony, in its entirety, in the record.

I would like to have the liberty, for this committee, to submit a number of questions to you in writing and have you respond should any member choose to do so.

Mr. HIGHTOWER. I will be very glad to do it.

Senator BENTSEN. I would like to ask them orally now but there's simply a problem of time restraints and we have a substantial number of witnesses that we want to hear.

Thank you very much for taking the time to come out here.

Mr. HIGHTOWER. Thank you for coming. We will work together.

Senator BENTSEN. Now, to return to the witness stand, I would like to have the Department of Energy, Mr. William Purcell.

Mr. Purcell, you're going to be able to elaborate on your testimony a little after some of the statements that have been presented.

Mr. PURCELL. Mr. Chairman, I had finished my statement so I'm available for questions.

Senator BENTSEN. Mr. Frank Ford, who's the head of Arrowhead Mills, has asked that he be allowed to ask you some questions and I understand that you have agreed to submit to those questions. This is not usual procedure, but in light of the importance of the issue before us I have agreed to Mr. Ford's request and have limited those questions to 5 minutes.

Mr. FORD. Yes, thank you.

Mr. Purcell, I appreciate your willingness to do this.

You have mentioned before that you were willing to stand on the record of the DOE and the EPA.

Are you familiar, sir, with the Wilsonville, IL, situation in 1978 where the EPA ridiculed the local citizens that said that it was dangerous to put chemical toxic waste through a clay shaft. EPA said that it would be safe at least a thousand years, and in fact, when they got it done, it leaked within 1 year, polluted the water and there is some $255 million in lawsuits. This is according to a March, 1982 article in the Amarillo Globe News.

Are you familiar with that, sir?

Mr. PURCELL. No; I am not.

Mr. FORD. Most people here are. At least, two or three poeple that I queried.

The Nuclear Regulatory Commission, of course, came along after the Atomic Energy Commission.

The Atomic Energy Commission assured the citizens of Utah that the drift from the atomic test sites would not be a problem. I think we know what happened there.

Mr. PURCELL. Yes.

Mr. FORD. The DOE undoubtedly is aware of the Russian nuclear waste dump that exploded. That was in an article in the Scientific American some 4 years ago. In the 1950's the Russians found out that water and nuclear waste don't mix.

So if we're going to stand on the record of EPA, DOE, NRC, I would like to have you address some of those questions, if you would. I think the crowd here would appreciate it.

Mr. PURCELL. Well, with respect to the Russian accident, there's not a great deal that's really known about it, in fact I have no knowledge that it was any interaction of waste with water, to my personal knowledge.

With respect to the other activities, there have been mistakes made in the past and I think people would acknowledge that. We have a much stronger Nuclear Regulatory Commission today and the Environmental Protection agency is stronger also.

Both agencies are actively engaged in developing criteria for this repository site.

There is a very large staff of dedicated people in the Nuclear Regulatory Commission working today on the criteria for an acceptable repository site.

I want to emphasize, again, that this is a very long, involved process. There will be ample opportunity to explore all issues that are pertinent to the judgments that will be made and we welcome any comments that anyone has on our environmental assessments that we distributed.

We will be happy to entertain those comments and they will be considered in the final issuance of these documents later this year.

Senator BENTSEN. Only one more question, Mr. Ford. Perhaps you could submit the balance of your questions in writing and, Mr. Purcell, I would appreciate your responding to them in writing.

The record will be left open for another 3 weeks.

Mr. PURCELL. Yes; I will be happy to do that.

Mr. FORD. Thank you very much, Senator Bentsen.

When the DOE had the hearings here over the past 2 years, they answered a question as to whether a shaft of the size that you're talking about, 22 feet and 12 feet had been put through two water tables or even one in the past and the answer was yes; I then asked where was that and the answer was Louisiana. Upon further questioning, it turned out that it was a surface pit.

Now, from what most of us have gathered that the technology for putting a large shaft through two water tables and then having the static pressure at 2,200 feet is something that is really a unknown.

So would you respond to that?

Mr. PURCELL. Yes; the technology for doing that is available. And I submit that we would be doing this as a part of the exploratory shaft, well in advance of any transfer of radioactive material.

In that process, we will demonstrate the adequacy of that shaft and seal and if there are any difficulties with it, if for any reason it isn't an acceptable situation, then we would not proceed with the repository.

I will be happy to provide the answers to your questions in writing.

Senator BENTSEN. Thank you very much, Mr. Ford. We will be hearing from you on the panel a little later.

Mr. Purcell, because of time restraints, I am going to be submitting a list of questions to you which I would appreciate you responding to in writing. (See p. 50.)

I do appreciate your courtesy in coming here and the testimony that you have presented.

Thank you.

Mr. PURCELL. Thank you very much, Mr. Chairman.

Senator BENTSEN. Our next panel of witnesses will be State Senator Bill Sarpalius; and Congressman Boulter will be represented by Janette Taylor; and State Representative John Smithee will be represented by Jim Parris; Congressman Combest will be represented by Ken Carroll.

If you will lead off, Senator.

STATEMENT OF HON. WILLIAM SARPALIUS, TEXAS STATE SENATOR

Mr. SARPALIUS. Thank you, Senator.

I would like to begin by thanking you. You have proven to the people of the Texas Panhandle and throughout the State that you are, indeed, taking this situation seriously and willing to come here and listen to the people and look into their faces and see that this is not something that is funny to them, but it's their future and their livelihood and the future of their children.

I have been following all of the DOE hearings every since they first started, and I feel, like in many situations, we have probably been misled.

You heard from the Commissioner of Agriculture as to the value of agriculture to our economy here.

In the last session of the Legislature, we approved legislation that would give the State of Texas the right to issue a permit to any entity who want to drill a shaft through a water aquifer.

It is my understanding that the next step for the Department of Energy is to obtain that permit from the State of Texas.

I hope that you will support us in any effort. I think that the citizens of the State should have their right to make sure that our water is protected and that any records, anything the DOE has done should be open to the State of Texas on obtaining that permit to make sure that our water is, indeed, protected.

I am a member of the National Legislative Council dealing with the storage of high-level nuclear waste. We're having a hearing next week in Denver and I heard from many States who are very

concerned about, not necessarily where they're going to put it, but how are they going to transport it there.

The State of Iowa saw that out of all three locations, that they would have a high number of trucks carrying high-level nuclear waste moving across their State.

You stated this morning that whichever the final location is there probably would be 49 States that feel like that that's where it ought to be.

But I think if we look at the transportation aspect, even here in the Texas Panhandle, you're looking at a truck every hour, 24 hours a day, everyday of the year.

If you will look at the weather conditions that we had here just recently in the Texas Panhandle, I find it difficult to visualize these trucks carrying high-level nuclear waste sliding along on our icy roads every hour of the day.

So the ideal situation has always been, and DOE has stated it, is to have a location on the Western part of the United States and a location on the Eastern part of the United States.

Another thing that has concerned me and my colleagues is the cost factor involved. DOE is spending a million dollars a day. You have been a leader, on the Federal level, in trying to balance our budget and cut costs where ever we can.

I think that if you could look at States such as Washington State who has agreed to take this stuff and store it there and are willing to accept it, why should we continue spending the money on the Texas Panhandle site.

I ask you, Senator, to listen to these people with an open mind and fight for them, for us, in Washington and do whatever you can to protect our people and try to prevent the Department of Energy from giving us the shaft.

Thank you.

Senator BENTSEN. Thank you very much, Senator.

Let me say to each of you that we are going to take your written statements in their entirety and I would ask that you limit your oral statement to 3 minutes each since we have taken on a number of additional witnesses that we had not heard from before.

I would like to next ask Janette Taylor, representing Congressman Beau Boulter to comment.

STATEMENT OF HON. BEAU BOULTER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS, PRESENTED BY JANETTE TAYLOR

Ms. TAYLOR. Thank you, Senator Bentsen.

Unfortunately, Congressman Boulter could not be here today and asked me to come in his place. So I would like to read his written statement for you.

Thank you for this opportunity to express my views on the proposed nuclear waste storage site in Deaf Smith County. I will gladly take every available opportunity to voice my opposition to the selection of sites in either Deaf Smith or Swisher Counties; however, in voicing that opposition, I think it is important to maintain a realistic attitude toward nuclear power.

It's a clean efficient producer of electrical power and this country should have it. To that end, the Federal Government should encourage its development and avoid over regulation that may hamper its progress.

The Federal Government must also act responsibly to the need for permanent nuclear waste storage but for several reasons, I feel strongly that neither of the sites are appropriate.

First, we do not at this point have sufficient guarantees that the storage or construction, for that matter, will not permanently damage the quality of water in our aquifer.

Second, the selection process has been unfair. Texas does not even have a nuclear powerplant on line, yet we are considered one of the three leading candidates for permanent nuclear storage. Other States which have been producing nuclear power for quite a long time have barely been considered.

Third, the projected costs for building the storage facility, which at one point made this the most economical method of storage, have risen steadily during the study of this plan and its approval by the U.S. Congress.

Accordingly, there may very well be an alternate disposal method for nuclear waste. These alternatives must be explored. I believe that these three reasons alone make a strong case against either the Deaf Smith or Swisher site.

I thank you for your time and I assure you that I will continue to be vocal in my opposition to either site.

Senator BENTSEN. Thank you very much.

Next will be Jim Parris representing State Representative John Smithee.

Mr. Parris, if you will keep your oral statement to 3 minutes and we will take your full written statement.

STATEMENT OF JIM PARRIS, REPRESENTING HON. JOHN SMITHEE, TEXAS STATE REPRESENTATIVE

Mr. PARRIS. Thank you, Senator.

I did not bring a written statement with me, Senator; however, I will provide one to your office. And in keeping my promise to Kate, I think I can give you some time back.

The No. 1 issue that we've received more letters on from our constituents from Deaf Smith County and from Randall County in the last month concerns the storage of nuclear waste in the Panhandle of Texas.

The people who write to us and call us cite all of the same reasons we've heard today, but they also cite what Senator Sarpalius has just told us: "This is our homeland, this is where we choose to live, this is where we choose to raise our families, to work and to die and we do not want the Federal Government dumping their waste on us."

Thank you.

Senator BENTSEN. Next will be Mr. Ken Carroll, who will be representing Congressman Larry Combest.

STATEMENT OF KEN CARROLL, REPRESENTING HON. LARRY COMBEST, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. CARROLL. Thank you, Senator.

Unfortunately, Mr. Combest was unable to be here today. I would not take that as any indication that he is less than interested in this subject. He asked me to be here. I'm not going to reiterate what has been eloquently stated by all of the other witnesses here. I will say that Mr. Combest will be here on February 28 for the Department of Energy hearing. He will have a full statement at that time. I think that you will find that he shares all of the objections that we have all heard here today.

Thank you.

Senator BENTSEN. Thank you very much. We appreciate it.

Our next witness will be Mr. Wayne Richardson, the vice president of POWER—People Opposed to Waste Energy Repositories—and he will be accompanied by Delbert Devin, STAND; Don Hancock, Southwest Research and Information Center, and Tonya Kleuskens, president of POWER.

Mr. RICHARDSON. Good afternoon, Senator.

Senator BENTSEN. It is my understanding that you will be the only one testifying, but the others will be available for questions.

Mr. RICHARDSON. Yes, sir. That is correct.

Senator BENTSEN. We would like to hear your statement.

STATEMENT OF WAYNE RICHARDSON, PRESIDENT, RICHARDSON SEED FARMS, REPRESENTING POWER, INC.

Mr. RICHARDSON. First, let me say we appreciate the opportunity to be heard and very much appreciate your attendance. May I welcome you to Hereford, Senator, and Deaf Smith County.

Senator BENTSEN. Thank you. I'm glad to be back.

Mr. RICHARDSON. I am Wayne Richardson, president of Richardson Seed Farms. I am also vice president of POWER, an organization of Deaf Smith County citizens which has been actively involved in the waste issue for the past 2 years.

With me this afternoon on my left is Tonya Kleuskens, president of POWER; Delbert Devin, president of STAND; and on my right, Don Hancock of Southwest Research and Information Center in Albuquerque, who is the technical adviser for both POWER and STAND.

I fully understand that nuclear waste disposal is a vital national concern. But I believe the DOE's site selection program is very seriously flawed, especially as it relates to Texas.

The fact that DOE has moved its site in Deaf Smith County twice in the past 2 years before settling on the present area, the fact that several of the affected landowners were not notified that their land was being considered until about December 1, 1984, and the fact that DOE's documents contain a large amount of misinformation combined to raise significant questions about the quality and legality of DOE's work in Texas.

We intend to participate actively in the environmental assessment hearings, although DOE has been working on the EA's for over 18 months, we have less than 90 days to comment on them.

We would certainly appreciate the committee's encouraging the DOE to extend the comment period for at least 60 additional days.

My testimony today will focus on the socioeconomic impacts of a repository in Deaf Smith County. Very similar negative impacts would also occur in Swisher County.

I want to emphasize that most of the impacts that I will mention occur at the beginning of site characterization, with the DOE decision to do site characterization and the resulting land condemnation.

Such condemnation would take years and cost perhaps hundreds of millions of dollars and would mean that the site would be under consideration for a repository for at least 15 years even if not selected for the repository.

Over 95 percent of the Deaf Smith County site is irrigated, highly productive farmland, although the EA statement says only about 50 percent is irrigated. The EA's state that 17 wells are within 3 miles of the center of the repository site, 3 wells within the 9-square-mile site area.

Actually, there are 36 wells within the 9-square-mile site.

Crops grown on the site include sugar beets, wheat, milo, corn, grain sorghum, sunflowers. A conservative estimate of gross receipts annually from the 9 square miles is $2 million.

DOE estimates the gross receipts at $625,070 in 1982 dollars.

According to DOE, the total estimated revenues lost in 1996 would be just under $1 million. It is important to point out that all DOE's figures are regional estimates, because they have never met with the individual landowners to find out what they actually produce.

Additionally, this figure includes no estimate of the loss of production from outside the site. At a minimum, three more sections of Richardson land would be unusable at its current level because of the loss of the five Ogallala and one large Santa Rosa well used to irrigate those sections through a 12-mile network of underground pipe.

This Santa Rosa well is also the future water supply for the city of Vega. The foundation TAES Hard Red Winter wheat varieties maintained at Richardson Seed Co. were used in 1984 to plant 8,430,000 acres of wheat in six States with a total value of approximately $1 billion.

Additionally, 1,600,000 acres of grain sorghum, 500,000 acres of hay crops was produced with seed from Richardson Seed. Thus, despite DOE's statements to the contrary, the direct economic impact on agricultural extends into several States.

While I will not go into as much detail about Swisher County, it is worth noting that in their draft EA, DOE not only underestimates the amount of irrigated farmland, but also grossly underestimates the amount of livestock grazing at the site.

The draft EA says that there are probably less than 200 head grazing on this site, when in reality there are more than 1,000 head for several months of the year. Again, therefore, DOE has greatly underestimated the amount of lost revenues from condemning the site.

In addition to losing the foundation seed source for grains grown in seven States as already mentioned, Richardson Seed purchases

about 85 percent of its hybrid sorghum seed from other farmers in the area. The revenues received from such production are higher than what they would otherwise receive. Arrowhead Mills, Frito-Lay, Holly Sugar and other agricultural producers will also be affected by this repository and the committee can receive information on this issue directly from the affected companies.

Landowners and operators in and around the proposed sites in both counties are in economic limbo. Lenders are reluctant to give long term loans and declining property values reduce dramatically the collateral that farmers have.

Property values have demonstrably declined. Area realtors value irrigated farmland at $750 to $1,000 per acre in surrounding counties.

One example of the declining values is that within the last 2 weeks, 160 acres of irrigated farmland, less than 1 mile from the site, sold for $400 pr acre after being on the market for 2 months. The equity losses in the area are the multimillions of dollars.

In 1984, Pennzoil leased over 15,000 acres of land north of the site for $25 to $30 per acre, bonus rental and has recently begun renewing these leases but it has not leased land at the site, thus landowners in and around close to the site may well have already lost thousands of dollars in royalties.

The city of Vega's current water supply comes from five Ogallala wells. Its only long term source of water is the Richardson Santa Rosa well that I previously mentioned and on which the city has a long-term contract.

The mayor and other city officials do not know of any other source of water and any other source located would be distant and extremely expensive.

This well is in the Santa Rosa or Dockum formation. It was drilled in 1977 to a depth of 872 feet and has excellent quality water.

At current consumption levels in Vega, and production levels in the well, it could supply Vega's water needs for 300 years and still have over 50 feet of water remaining.

As school board president, I am very aware of the cost and substantial tax increases necessary to build new classrooms, hire new teachers and provide other services for children of the construction workers who would come into the area. I want to point out that despite the draft EA statement that Vega school has an excess capacity of 176 students, the school currently does not meet the Texas Education Agency's suggested requirements, thus any significant increase in the number of students which would occur from construction workers during characterization would require substantial expenditures for new construction and teachers.

In the short run, it would result in overcrowded classrooms and decreased quality of education. The tax base times the maximum statutory allowed tax rate would not generate enough revenue to meet minimum State requirements for operation and instruction if additional bonded indebtedness is required and given the overwhelming community resentment toward a nuclear waste repository, there would be absolutely no chance of passing a bond issue.

There are sewage and street concerns of Vega which are described in a report by west Texas consultants and just released. I have already provided a copy of that report to the committee.

The DOE's draft environment assessment estimates that about $165,000 annually in crop and livestock revenues would be lost because of in-migration. As with other DOE guesstimates, we believe this to be grossly understated.

For example, DOE estimates that most of the construction workers will live in Amarillo, Canyon, and Hereford with only about 9 percent living in Vega or nearby rural areas.

Vega's past experience with highway construction crews, siesmograph activity, and oil and gas exploration crews indicate that a large percentage of the workers will attempt to locate in or near Vega.

The Ogallala water aquifer is the largest in the United States as previously mentioned. In August of 1984, it contained 19 times more water than the total of the 71 largest reservoirs in Texas. That a repository which would penetrate such an aquifer which supplies drinking and irrigation water to eight States is even being considered is absolutely incredible.

The Ogallala aquifer currently supports a multibillion dollar agriculture industry of vegetables, wheat, corn, sorghum and sugar beets, not to mention it being the largest cattle feeding area in the Nation.

The High Plains area also produces over 90 percent of the world's supply of hybrid sorghum seed. Such resources, of course, are important economically for the area, the United States and the world since many products are exported, that such resources could be and are threatened by a repository is undisputable.

In closing, let me quickly recap some of the major issues. Of course, one of the first and foremost is the Ogallala aquifer, the Santa Rosa aquifer and the loss of the future water supply for the city of Vega.

The tremendous economic loss from lost agricultural production and the fact that DOE personnel have not been on the site and investigated it.

The 30 to 40 percent decline in land values and the accompanying equity losses, which are the life savings of many landowners.

The loss of the foundation seed source for 8 to 9 million acres of wheat.

The lack of facilities in the city of Vega to handle the large influx of workers.

The lack of staff and facilities of Vega Independent School to handle the expect increased enrollment.

My testimony has pointed out some of the economic losses that would certainly occur from site characterization and from a repository, along with many other impacts that will likely occur.

To ask the citizens of this area to live under such a shadow of uncertainty about the future for 5 to 15 years is a totally unacceptable burden and not in the best human rights tradition of this great United States of America.

None of these negative impacts includes cost from any of the innumerable accident possibilities which could occur during reposi-

tory operation or over the thousands of years that some of the materials buried would be toxic.

Thank you again, Senator, for the opportunity to testify. We would be happy to attempt to answer any questions you may have.

Senator BENTSEN. Mr. Richardson, there is no question that your seed farm contributed materially to the national effort to grow fine wheat.

Now, let's just suppose the DOE did choose this site, have you decided what you would do?

Do you think you could continue your operations?

What do you think?

Mr. RICHARDSON. Not in its present form, sir. No.

Senator BENTSEN. Not what?

Mr. RICHARDSON. Not at its present level. it would be at a greatly reduced level because of the loss of the water and irrigation facilities, supplies, and the stigma involved with the site.

Senator BENTSEN. You made the statement about the drop in value of the farmland and I heard others testify to that also.

How much of that do you think is due to what's happened to agriculture in general?

And how much of it is because of the pall hanging over this particular area because of the possible choice of this site by the DOE?

Mr. RICHARDSON. The first figure mentioned was current levels being quoted by area realtors. I would assume that they would have built into them quite a bit of the factors involving the agricultural situation.

And that the level of sale, of course, was very close to the site and would reflect fully the effects of the possible site location.

Senator BENTSEN. But you don't have anyway of really determining how much is attributable to that and how much is attributable to what's happening in agriculture.

Mr. RICHARDSON. No. sir. There has been no other land sold in that area in the last several years and the new kid on the block in our area has been farming there for some 20-some years.

Senator BENTSEN. I want to ask some questions of each of you.

If each of you were to ask DOE to do something differently in the selection process than it is now doing, what would you ask them to do?

Ms. KLEUSKENS. Yes, could I be heard?

Senator BENTSEN. Surely.

Ms. KLEUSKENS. OK. I would like to request the Department of Energy to be more sensitive to the knowledge of the people that live within this area and all the other areas that are under consideration.

When they have presented their information to us on many occasions, it has been very contradictory and they have treated us in the manner that is almost belittling of the people who live here and who have spent their lives learning about the land and what is under it.

There are many other things that I would like to ask them to do and primarily, just as Governor White has stated, that would be to decide what would actually constitute a safe repository and then begin to select the sites.

Mr. DEVIN. Thank you, Senator, for a chance to say a few words from Swisher County. I've got some people out here from Swisher County.

We welcome you to the Panhandle, too, although you're in from Swisher County.

I'm directly effected, have been all along in this process.

Senator BENTSEN. I think it's a great place to spend my birthday.

Mr. DEVIN. I believe, as far as the Department of Energy is concerned, if we will go back to the basics of this whole thing, where every area, with every suitable medium, should be adequately investigated on a fair and impartial basis.

There are bedded salts in the Salina Basin which underlies Michigan, Ohio, New York, parts of four States there which is equal or superior to the bedded salt in Texas, which eliminates the nightmare of transportation, the cost of transportation, and those have not been adequately considered in the salt selection process.

Again, I come back to the fact that it seems to me like to be equitable and fair that all areas, all mediums should be investigated adequately on afair and impartial basis.

Thank you.

Mr. HANCOCK. Senator, in addition to the things already said, I think the most critical decision the DOE should be making right now and the one that I would ask the Congress to look at very carefully is, as Mr. Purcell said, under the act, DOE is supposed to characterize three sites.

But the fact of the matter is, DOE doesn't have three sites in the first round, States that they're looking at that they can characterize.

It will be impossible in any reasonable timeframe to get approval to characterize a site in Texas ir a site in Utah or a site in Mississippi or a site in Louisiana because of local opposition, State regulations and national regulations relating to the national park in Utah.

So the Department of Energy needs to decide now that the program as outlined in the act, given the way they're trying to implement the act, is unworkable. So that the Department of Energy and you in Congress can say, all right, we thought we had a process set up in the Nuclear Waste Policy Act of 1982 to solve the problem. We now understand that we don't and the process as outlined in the act cannot work the way we're trying to implement it so that DOE either decides to do the program right, along with the suggestions that have been made by the Governor and other people today, or that Congress decides that the program should be taken away from the Department of Energy and given to some agency that would be interested in a scientific program, rather than, as Commissioner Hightower characterized it, as we've got a lot of waste so we're in a haste to make a real bad decision.

Thank you, Senator.

Senator BENTSEN. Let me ask any one of you who knows if the DOE personally inspecting either the Deaf Smith County or the Swisher County site? Any one of you?

Mr. RICHARDSON. The only personal inspection that I know of that has come to my attention or anyone's attention within the site, has been the first draft assessment books could not find their

way to my mailing address and after two weeks and extensive telephone calls to Columbus, OH, I had two delivered from an engineering firm in Amarillo who were employed by Batell.

Upon his arrival, I asked if he would please accompany me to visit the large Santa Rosa well that had been overlooked completely and take a tour of the area and, in doing so, this engineer and I had some conversation.

And one other instance, regarding the Foundation Seed which is totally neglected or not mentioned in the EA's, I had a telephone call from College Station, Harvey Walker, the manager of Foundation Seed stocks, and a consequent note dated June 25, 1984, that a Tom McClure and Foy Batell had inquired as to them about the relationship and cooperative agreement between Foundation Seed Section of A&M and Richardson Seed.

The following day, Mr. McClure appeared and went through our documents and files verifying the contracts and production of Foundation Seed.

There is no mention of it in the enviromental assessment or any following material; however, those are the only two instances and they were very limited in contract.

Senator BENTSEN. All right. Thank you very much, Mr. Richardson.

And thank you very much, all of you for your comments.

We have another panel and then I will be calling on the DOE officials for additional comments in reply to the questions after this panel.

The next panel is Mr. Frank Ford, chairman of the board of Arrowhead Mills.

And is Mr. Calvin Jones here?

Mr. JONES. Yes, sir.

Senator BENTSEN. Good. Mr. Jones, agriculture manager of Holly Sugar Corp.

STATEMENT OF CALVIN JONES, AGRICULTURAL MANAGER, HOLLY SUGAR CORP.

Mr. JONES. Thank you, Senator, and welcome to Hereford, and happy birthday.

Senator BENTSEN. Thank you, sir.

Mr. JONES. Regarding the proposed site selection by DOE of an underground nuclear waste repository in Deaf Smith County, TX, as a large agri business located in Deaf Smith County and relying on the surrounding area for sugar beet production for the manufacture of sucrose sugar, liquid sugars and several byproducts, namely, sugar beet pulp and molasses, we feel the location of the waste repository in Deaf Smith County would drastically effect our business.

As a very productive agricultural soil, the mere removing from production an acreage to build this facility makes little, if any, sense.

The greatest danger or potential danger lies in the possible contamination of water in the Ogallala Aquifer, our main source of water, not only for irrigation but also domestic and industrial use.

Contamination of the aquifer not only effects Deaf Smith County, but also areas to the north into Nebraska, to say nothing of the fertile lands east, south, and west of Deaf Smith County.

We doubt very seriously if we could continue to market sugar, pulp, and molasses from our Hereford facility due to the potential contamination, whether real or psychological. Sugar customers within our market area, namely, Dallas, Houston, Oklahoma City, and New Mexico, to mention a few, would undoubtedly be reluctant to purchase the products manufactured at Hereford.

This association also may be felt in marketing products from our California facilities and/or our Montana and Wyoming facilities.

Pulp and/or molasses is marketed thoughout the area as cattle feed, sheep feed, and dairy feed. So you can easily see the implications involved with these products as well.

The very livelihood of employees, farmers and landlords will be effected. The annual purchases of supplies, not only sugar beets, but parts, chemicals, equipment repairs and other needed supplies would be greatly jeopardized effecting the economy of the entire area.

From and industry standpoint, and an area economic standpoint, we see no logical reasoning for selecting Deaf Smith County as a site for locating a waste repository.

May I share a few facts regarding the possible results of locating a nuclear waste repository in Deaf Smith County or for that matter, in the Panhandle of Texas: As you may or may not be aware, Hereford is the site of Holly Sugar Corp's newest and largest beet sugar factory. The Hereford factory is the only sugar beet operation in the State of Texas and offers farmers within a nine-county area an alternative crop.

I would like to elaborate on specifics of the Hereford factory. First of all, the sugar beet growers who grow sugar beets we process No. 311. These growers also involve another 200 landowners. Each grower invests approximately $70,000 in his 124-acre sugar beet crop, or $21,900,000 is invested by sugar beet growers in a nine county area which produces sugar beets for processing at Hereford.

Second, to process sugar beets at Hereford, we, and I speak of Holly Sugar, purchase $4,500,000 worth of goods and services within the State of Texas. This does not include utilities paid of over $4,700,000.

Third, consider for a moment the employment of 100 year round and an additional 200 to 300 persons during our processing season. This guarantees an annual payroll of $3,300,000.

And fourth, agricultural economists estimate agricultural dollars roll over or turn seven times within the community or area.

The aforementioned figures total $34,400,000, or $240,800,000 is generated each year from the production and processing of sugar beets.

This is to say nothing of the quarter of a million dollars paid in taxes in Deaf Smith County or the marketing of sugar and byproducts which is in jeopardy with the nuclear word attached to Holly Sugar's operation.

All or nearly all of the sugar produced in Hereford is marketed, as I mentioned, in Texas, Oklahoma, or New Mexico.

45-432 O—85——2

Byproducts are likewise marketed in Texas, New Mexico, and in Arizona.

Corporately speaking now, we market sugar nationally and byproducts worldwide.

These comments may seem selfish and narrow minded; however, I know you have heard testimony concerning other area industries as well as contamination of underground water of both aquifers.

I wholeheartedly support their testimony.

I appreciate the time you're taking and the support you will give the Panhandle in opposing the location of a nuclear waste repository.

Thank you.

Senator BENTSEN. Thank you, Mr. Jones.

Have you given any thought as to what you would do at Holly Sugar if the DOE would select this site?

Would you be able to carry on your operations?

Do you think your sales would be adversely affected?

Would you say?

Mr. JONES. I think our sales would be adversely affected, not only from this plant. This plant generates approximately 18 percent of Holly Sugar Corp's sugar, but I think it would also affect our other plants as well.

Senator BENTSEN. Have you given any thought to what you would do?

Mr. JONES. There has been a lot of talk about what we would do. I suspect we may have to curtail business in Hereford to jeopardize the plant.

Senator BENTSEN. Have you had any inquiries from customers about the waste repository?

Mr. JONES. No, sir.

Senator BENTSEN. Have any of them expressed any concern?

Mr. JONES. Not to my knowledge, they haven't. But they may have through the corporate offices.

Senator BENTSEN. All right. Now, Mr. Frank Ford of Arrowhead Mills.

Frank, the committee wants to hear your testimony.

STATEMENT OF FRANK FORD, CHAIRMAN OF THE BOARD, ARROWHEAD MILLS

Mr. FORD. Senator Bentsen, we have heard a lot about how agriculture can't be subsidized with budget deficits and the trade deficit amounting to $1 billion a day.

And yet, we're seeing the nuclear power industry subsidized very greatly here and I don't know that it's a fundamentally sound thing for our Nation to be doing.

The nuclear power industry has wrecked their bond holders in the northwestern United States and have had problems at Three Mile Island and other places where they have shown that they don't have the technical competence or the technical interest in becoming as competent as they are, for instance, in Europe.

And on top of that, we're apparently promising to take nuclear waste from other nations if they will take the nuclear power from our particular industries here in this Nation.

So the fundamental question of whether we should have to be subsidizing, at State and Federal levels, all of these efforts to fight something this innocuous, this—insane. I mentioned the article out of the Scientific American that did indicate that Russia had thousands of square miles destroyed in a nuclear explosion.

And you add to that, these trucks that will be coming at the rate of 1 per hour through the States of Oklahoma—I see the sign back there—and these other States, to put it through two water tables, the Ogallala, which serves the eight States we've heard about, the 25 million tons of salt that would blow down wind to Amarillo sterilizing the soil, it wouldn't take an inch, it wouldn't take a half-inch or a quarter-inch of salt to sterilize the land.

So we have something here that really seems to be a catch-22 that we got caught on the horns of this three site characterizations, but first of all, the guidelines were flawed and secondly, the DOE has not followed the guidelines.

I would be very happy for them to read the articles about how the Environmental Protection Agency scorned the local citizens who have expressed the same interest that we have in avoiding a problem at Wilsonville, IL, and it turned out that the citizens were exactly right and the EPA was exactly wrong. It polluted their water and destroyed their industries, their community within 1 year.

We keep hearing the technology exists for this, but we don't know of any shaft anywhere of the size that they're talking about that has kept water out for 10 years, much less 10,000 years.

If the people here in the audience are going to be loyal to their children and to their grandchildren, we're going to have to oppose, not only the putting of nuclear waste here in 15 years, but even the drilling of a shaft through two water tables that could be very devastating to Richardson Seed Farms, which is such an important force in the hybrid seed business and throughout that area.

The loss of income already through lack of interest in oil and gas leasing and the downplaying of the value of our land has been very substantial. We have taken the hit and, frankly, I think it's time that we stand up and say that we're going to not have it here.

Arrowhead Mills does not intend to move because we don't intend to lose.

Senator BENTSEN. You have a company that is uniquely associated with this area and you're talking about a company that probably faces the strongest threat from the waste repository because your grains are marketed as organic.

Have you taken any steps to minimize the risks presented by DOE activities?

Mr. FORD. We have been very pleased to find that we have tremendous support from consumer groups across the Nation, from environmental groups, and from agricultural groups.

We have not felt threatened by what has happened so far, although I will say that in, I believe it was May of 1982, one of the individuals who had told us that he would get us put it on national television, it was on ABC News, evening news that we were one of the three sites. This was in May 1982. I happened to be in Dallas.

Senator BENTSEN. Who was this? Was this a customer or who was it?

Mr. FORD. No, sir; this was put on by the DOE to the press and we were categorized as one of the three sites in May 1982 on ABC News.

Senator BENTSEN. Have you had any inquiries from customers as to the possibility of this being chosen as the site?

Mr. FORD. Yes, sir; I have just been to Anaheim and then to Orlando, to two trade shows. It just happened that they were very close together, put on by two different organizations and in the natural food trade, both of them were well attended. There were probably $3 billion in sales represented at the first one and some half of that at the second one between the companies.

Almost every person I knew and almost every customer we had, the first question they asked me, what on Earth is going on with this nuclear waste thing. We see Deaf Smith County is being targeted for one of these sites.

And I said, indeed, we are. And we have fought it for 5 years. This first surfaced in 1978, and we had a petition drive and it went underground and then we thought that it was whipped and then in February, I believe, of 1982, after very careful ground work with certain key individuals, but not even telling the press, the DOE surfaced again and they thought they had a fait accompli already for us.

There have been 20 or 30 DOE people here: they have been on the Federal payroll; they have spent millions of dollars and here we are with a farm economy that is getting one-third less prices than we did 4 years ago because of the big budget deficits and becasue of the high interest rates, and no exports because of the strong dollar.

We really don't need any more hits. But if we're going to be hit, we're willing to take it, we're going to come back swinging. We've got the facts. We are going to see some common sense prevail. My granddad once said, the trouble with horse sense is that horses have it all.

Looking at this whole thing, you have to say that they don't have the facts. They don't have the scientific background to back it up. They can't answer the questions.

Senator BENTSEN. Well, that's one of the reasons for these hearings, to ask the questions and try to get some of the facts and to try to get those citizens that would be most affected to give their viewpoints because that is one of the most important of the criteria by which that site should be chosen.

Thank you very much, gentleman.

Mr. FORD. Thank you, sir.

Senator BENTSEN. I would like to now call back the Department of Energy and have their testimony.

Mr. Purcell, I would like to ask you if, when it comes to the sinking of a shaft, do you expect to comply with the State of Texas permitting requirements?

Mr. PURCELL. Yes, sir, Mr. Chairman. We will comply with all the State laws and requirements with respect to construction of the exploratory shaft.

If there is any conflict with the Nuclear Waste Policy Act and our mission under that, then this would have to be discussed and we would have to reconcile any differences.

But it is the policy of the Department to follow all local codes and requirements.

Senator BENTSEN. So you left that one hanging in the air as to how it might be reconciled.

Mr. PURCELL. I'm afraid so, Senator.

Senator BENTSEN. All right. Let me ask you another one then because we had quite a number of them that said no one from the DOE had approached them as to this particular site.

What have you done in that regard as to actually having DOE representatives here talking to the local citizenry insofar as the sites?

Mr. PURCELL. Most of the discussions with the local citizenry have occurred recently as a part of our briefings. We have not had briefing locally on site in any of the areas that have been identified as potentially acceptable sites.

Senator BENTSEN. Before the choice of this one as one of the three?

Mr. PURCELL. That's right.

Senator BENSTEN. Tell me how many DOE people came into this community to discuss the possibility of this being the site chosen?

Mr. GALE. Mr. Chairman, we have had a series of meetings by DOE representatives.

Senator BENTSEN. You've had them here at this site?

Mr. GALE. Yes.

Senator BENTSEN. Prior to the nomination of——

Mr. GALE. Yes. Also in Swisher County. We have had a number of those meetings. We have testified before Texas State legislative committees and we have had information exchanges as I mentioned with the affected parties and we have tried to bring affected parties into the process in as early a forum as possible.

So with regard to the recent briefings, I think those are just the latest in a whole series of public interactions we've had with affected parties, both in Deaf Smith and Swishers Counties.

Senator BENTSEN. Does that mean actual site visits and inspections?

Several Voices From Audience. No.

Senator BENTSEN. Let the gentleman answer.

That's what I'm after. At site visits and inspections?

Mr. GALE. We have had technical workers, engineers, scientists working on the sites, I think, as was indicated earlier.

Senator BENTSEN. Have you specific DOE employees here inspecting them?

Mr. TAYLOR. Yes, sir, Mr. Chairman. From our Columbus office, we have had quite a number of our staff people in the area in——

Senator BENTSEN. Prior to the nomination of these three sites?

Mr. TAYLOR. Yes, sir. There has been an on-going program. Many times the meetings have been held, for example, here in Hereford at the Community Center, as opposed to actually at the 9-square-mile site.

But the issues that have been discussed have been those that have been raised by people and we have also had meetings in Tulia. We had meeting in the spring of 1984 in which we did invite landowners whose land was in the 9-square-mile site to meetings here in Hereford and in Tulia.

We were back in the fall of 1984 and, of course, we had the public briefings in January 1985.

We've had quite a number of our, not only technical staff, but institutional relations staff who have been out at the sites and are somewhat familiar with them.

Mr. GALE. I would only add, Mr. Chairman, that we prepared this 29-page record of major DOE interactions with the State of Texas, which we could offer for the record, which delineates our interaction from 1976 through the present time period and provides descriptive material with regard to the nature of those interactions.

Senator BENTSEN. Fine. We would want that in the record. (See p. 89.) Now, let me ask you what experience do we have with a vertical shaft that is 20 feet or more, how wide would your largest shaft be, and of that depth, what experience do we have in that regard of drilling one to that dept and proving its stability over a substantial period of time?

Mr. GALE. The Department itself does not have that actual experience. There has been experience in the British Isles with regard to similar kinds of shaft work but what we're trying to stress . . .

Senator BENTSEN. Of those dimensions, in width and depth?

Mr. GALE. Yes. Similar to those, yes. Similar to those dimensions.

But what we're trying to stress, Mr. Chairman, is that through the sits characterization process in terms of establishing the viability of those kinds of technologies when applied to the Deaf Smith site, we hope to show the safety and viability of those processes.

And that's what the site characterization period of some 4 to 5 years of detailed technical study is all about, to test the newest forms of technology in terms of the needs of an underground repository, given the particular geologic formations at the Deaf Smith sits.

Senator BENTSEN. I know you must have some great expertise in that department and I know we have made substantial technological advances but what concerns me is, if you're 99 percent right and you're 1 percent wrong and that 1 percent happens, it's 100 percent for this area.

That's what makes it tough.

Let me ask you: Would the DOE consider extending the comment period an additional 60 days so that effected residents would have an opportunity to respond?

Mr. PURCELL. Yes. We will consider a request along those lines, Mr. Chairman. I can't make a promise that we will do it, but we will certainly consider it at this point.

Senator BENTSEN. There are those of us who will lean on you.

Mr. PURCELL. Yes.

Senator BENTSEN. Thank you very much. We will be submitting you a series of questions and we look forward to having your responses.

Thank you for coming.

Mr. PURCELL. Thank you.

[Whereupon the hearing was adjourned.]

[Statements submitted for the record, responses to written questions, and a letter from the Texas Department of Health follow:]

STATEMENT BY

WILLIAM J. PURCELL

ASSOCIATE DIRECTOR

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

U. S. DEPARTMENT OF ENERGY

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

HEREFORD, TEXAS

FEBRUARY 11, 1985

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I APPRECIATE THIS OPPORTUNITY TO PROVIDE THE SUBCOMMITTEE WITH INFORMATION ON THE POTENTIAL ECONOMIC IMPACTS OF DOE'S PROPOSED ACTIVITIES IN TEXAS AND THE EFFORTS THE DEPARTMENT IS MAKING TO DETERMINE THE EXTENT OF SUCH IMPACTS AND WAYS TO MINIMIZE NEGATIVE IMPACTS. BEFORE I DO THAT, I WOULD LIKE TO PROVIDE YOU WITH SOME BACKGROUND INFORMATION ON DOE'S NUCLEAR WASTE ISOLATION PROGRAM.

UNDER PROVISIONS OF THE NUCLEAR WASTE POLICY ACT OF 1982, DOE HAS THE RESPONSIBILITY FOR DEVELOPING A SAFE AND ENVIRONMENTALLY ACCEPTABLE WASTE DISPOSAL SYSTEM WHICH WOULD PROVIDE THE CAPABILITY FOR DOE TO BEGIN RECEIVING IN 1998 SPENT NUCLEAR FUEL AND HIGH-LEVEL WASTE FOR PERMANENT DISPOSAL. THE NUCLEAR WASTE POLICY ACT ESTABLISHED AN UNPRECEDENTED STEP-BY-STEP PROCESS BY WHICH THE PRESIDENT, THE U.S. CONGRESS, AFFECTED STATES, AFFECTED INDIAN TRIBES, DOE, THE NUCLEAR REGULATORY COMMISSION, AND THE ENVIRONMENTAL PROTECTION AGENCY, OTHER FEDERAL AND STATE AGENCIES AS WELL AS THE GENERAL PUBLIC CAN WORK TOGETHER IN SITING, CONSTRUCTING, AND OPERATING UNDERGROUND NUCLEAR WASTE REPOSITORIES. DOE ENCOURAGES FULL PUBLIC PARTICIPATION IN THIS OVERALL PROGRAM PROCESS. THE PRIMARY OBJECTIVE OF THE PROGRAM IS TO SAFELY ISOLATE HIGH-LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL BY DISPOSAL OF SUCH WASTES IN GEOLOGIC REPOSITORIES.

SINCE THE EARLY 1970S DOE HAS BEEN CONDUCTING STUDIES TO IDENTIFY SUITABLE SITES FOR DEEP GEOLOGIC REPOSITORIES FOR THE DISPOSAL OF NUCLEAR HIGH-LEVEL WASTE. THE REPOSITORIES ARE BEING DESIGNED TO RECEIVE AND EMPLACE WASTE FROM COMMERCIAL NUCLEAR POWER PLANTS, WHERE IT IS NOW TEMPORARILY STORED IN POOLS OF WATER. SHOULD A REPOSITORY BE CONSTRUCTED IN BEDDED SALT, SUCH AS THAT AT THE TEXAS SITES, IT WOULD BE MORE THAN 2,500 FEET UNDERGROUND IN A STABLE, DRY SALT FORMATION. THE WASTE THAT WOULD BE EMPLACED THERE WOULD BE IN SOLID FORM IN SPECIALLY DESIGNED WASTE PACKAGES. ISOLATION AND CONTAINMENT OF THE WASTE WOULD BE ASSURED THROUGH BOTH NATURAL AND ENGINEERED BARRIERS BETWEEN THE WASTE AND THE HUMAN ENVIRONMENT. NATURAL BARRIERS WOULD INCLUDE THE ROCK FORMATION IN WHICH THE REPOSITORY IS LOCATED, AS WELL AS THE SURROUNDING GEOLOGIC FORMATIONS. ENGINEERED BARRIERS WOULD INCLUDE A CORROSION-RESISTANT METAL CANISTER, A CANISTER OVERPACK, REPOSITORY BACKFILL, SHAFT SEALS, AND THE WASTE FORM ITSELF.

AS PART OF THE PROCESS OF DEVELOPING REPOSITORIES, LAND UNITS HAVE BEEN SCREENED TO IDENTIFY POSSIBLE SITES. SITES BEING CONSIDERED FOR THE FIRST REPOSITORY ARE IN SEVERAL TYPES OF ROCK, INCLUDING SALT DEPOSITS, BASALT (SOLIDIFIED LAVA), AND TUFF (COMPACTED VOLCANIC ASH). SITES IN CRYSTALLINE ROCK, SUCH AS GRANITE, ARE BEING CONSIDERED FOR THE SECOND REPOSITORY. THE PROCESS FOR IDENTIFYING POSSIBLE SITES FOR GEOLOGIC REPOSITORIES AND EVALUATING THEIR POTENTIAL INVOLVES THE COLLECTION AND ANALYSIS OF DETAILED GEOLOGIC, HYDROLOGIC, ENVIRONMENTAL, AND SOCIOECONOMIC DATA.

In February 1983, following passage of the Nuclear Waste Policy Act, DOE formally notified the States of Louisiana, Mississippi, Nevada, Texas, Utah, and Washington that they contained potentially acceptable sites for the first repository. DOE issued in December 1984 Draft Environmental Assessments (EAs) for review and comment for all the nine sites in the six States. The final EAs, to be issued late this summer, will serve as the basis for a decision by the Secretary of Energy on five sites to be nominated and three to be recommended for site characterization. The purpose of site characterization is to gather the detailed information necessary to select a site for the construction of a repository. If, at any time during site characterization, a site is found to be unsuitable in accordance with DOE 's General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories, it will be eliminated from further study and consideration.

In the draft EAs, DOE is proposing to recommend for site characterization a bedded salt site in Deaf Smith County, Texas; a site in tuff at Yucca Mountain, Nevada; and a site in basalt at the Hanford facility in Washington.

Later I plan to discuss the possible economic impacts of site characterization and repository development of the Deaf Smith site as well as the activities the department will be undertaking, in cooperation with affected parties, in order to assess the extent of such impacts, and plan for their mitigation. First, I want to briefly discuss two issues which we know are of particular concern to residents of the Panhandle area. We know they are of

PARTICULAR CONCERN TO YOU AS WELL, MR. CHAIRMAN. THESE ISSUES CONCERN THE POSSIBLE CONTAMINATION BY A HIGH-LEVEL WASTE REPOSITORY OF THE OGALLALA AQUIFER, WHICH IS THE PRIMARY SOURCE OF FRESH WATER FOR THE AREA, AND THE DELETERIOUS ECONOMIC IMPACTS THAT SOME FEEL THE MERE POSSIBILITY OF CONTAMINATION BY A NUCLEAR WASTE FACILITY MIGHT HAVE ON THIS AREA'S RICH AGRICULTURAL INDUSTRIES.

REGARDING THE OGALLALA AQUIFER, THE UNDERGROUND WORKINGS OF THE REPOSITORY WOULD BE LOCATED APPROXIMATELY 2,500 FEET BELOW GROUND SURFACE. THIS IS ABOUT 2,100 FEET BELOW THE BASE OF THE OGALLALA AND 1,500 FEET BELOW THE BASE OF THE DOCKUM GROUP, THE LOWER SET OF AQUIFERS. THE OGALLALA AQUIFER AND THE SANTA ROSA MEMBERS OF THE DOCKUM GROUP ARE THE TWO MAJOR FRESH WATER SOURCES IN THE AREA. A DEEP SALINE AQUIFER, CALLED THE WOLFCAMP, IS ABOUT 3,000 FEET BELOW THE HOST ROCK. THE PRESSURES IN THE VARIOUS AQUIFERS RESULT IN A DOWNWARD GRADIENT ACROSS THE HOST ROCK, WHICH MEANS THAT UPWARD MOVEMENT OF RADIONUCLIDES IS NOT LIKELY IF A DEEP UNDERGROUND RELEASE SHOULD OCCUR.

BOREHOLES AND SHAFTS ARE THE ONLY LIKELY PATHWAYS FROM THE OGALLALA TO THE HOST ROCK. THESE HOLES AND SHAFTS WILL HAVE SEVERAL SEALS AT VARIOUS DEPTHS TO ELIMINATE HYDRAULIC CONNECTION BETWEEN THE OGALLALA, THE DOCKUM AND THE HOST ROCK.

SINCE WATER TABLE LEVELS IN THE OGALLALA ARE ABOUT 300 FEET BELOW GROUND SURFACE, ANY SURFACE SPILL OR ACCIDENT WOULD NOT IMMEDIATELY COME IN CONTACT WITH THE GROUNDWATER TABLE. THIS WOULD ALLOW ADEQUATE TIME FOR CLEANUP PRIOR TO ANY CONTAMINATION OF THE AQUIFER.

A SERIES OF MONITORING WELLS WILL BE INSTALLED PRIOR TO SITE CHARACTERIZATION WORK. THESE MONITORING WELLS WILL BE SITED TO DETECT ANY CHANGES IN THE AQUIFER CAUSED BY THE EXPLORATORY SHAFT OR OTHER ACTIVITIES AT THE SITE. ALL MUD PITS AND SALT STORAGE FACILITIES WILL BE LINED AND MONITORED FOR LEAKAGE. SALT STORAGE PILES WILL HAVE RETENTION PONDS TO CONTAIN RUNOFF FROM PRECIPITATON. THE RUNOFF WILL BE EVAPORATED OR DISPOSED OF IN A LICENSED DISPOSAL FACILITY.

THUS, WE FEEL THAT NECESSARY PRECAUTIONS WILL BE TAKEN IN ORDER TO PREVENT ANY POSSIBLE CONTIMINATION OF THE OGALLALA AND OTHER AQUIFERS IN THE AREA.

REGARDING POSSIBLE DELETERIOUS IMPACTS ON THIS REGION'S AGRICULTRUAL INDUSTRIES, WE RECOGNIZE THAT THE PUBLIC PERCEPTION THAT PRODUCTS MIGHT BE CONTAMINATED, EVEN IF THEY ARE COMPLETELY SAFE TO CONSUME, COULD INFLUENCE THE DECISIONS OF CONSUMERS. WE UNDERSTAND THE CONCERN THAT THIS POTENTIAL PROBLEM POSES.

TWO FACTORS, HOWEVER, MIGHT SERVE TO DIMINISH THE PROBLEM. FIRST, MOST OF THE AGRICULTURAL PRODUCTS GROWN IN THE PANHANDLE REGION ARE SOLD OUTSIDE THE STUDY AREA. IN ADDITION, MANY OF THE LOCALLY GROWN PRODUCTS, SUCH AS SUGAR BEETS, WHEAT, AND SORGHUM ARE NOT IDENTIFIED SPECIFICALLY WITH A PARTICULAR REGION. FOR PRODUCTS THAT LACK A REGIONAL IDENTITY, CONSUMER ATTITUDES MIGHT NOT CHANGE AS A RESULT OF A REPOSITORY, THOUGH IT SEEMS CLEAR THAT FOR AGRICULTURAL GOODS THAT ARE PRODUCED AND SPECIFICALLY IDENTIFIED WITH THE REGION, THESE COULD BE A SHORT-TERM IMPACT ON CONSUMER ATTITUDES. SUCH IMPACTS ARE ADDRESSED IN THE DRAFT EAS AND WILL BE FURTHER ASSESSED DURING SITE CHARACTERIZATION.

ALTHOUGH THERE MIGHT BE SOME NEGATIVE CONSUMER REACTION TO REGIONALLY IDENTIFIED AGRICULTURAL PRODUCTS AT FIRST, OUR FEELING IS THAT AS SITE CHARACTERIZATION PROCEEDS (AND LATER, IF CONSTRUCTION AND OPERATION OF A REPOSITORY MOVES AHEAD) NEGATIVE ATTITUDES WILL DISSIPATE AS SAFE OPERATIONS ESTABLISH A POSITIVE RECORD OF SITE CHARACTERIZATION AND REPOSITORY ACTIVITIES. THE BEST ANTIDOTE TO FEAR, IN OUR OPINION, WILL BE THE RECORD OF SAFE OPERATIONS TO WHICH THE DEPARTMENT, AS WELL AS EPA AND NRC, THE AGENCIES THAT REGULATE OUR ACTIVITIES, ARE FIRMLY COMMITTED.

WE ARE ACUTELY AWARE OF THE CONCERNS RAISED REGARDING THE OGALLALA AQUIFER AND THE DELETERIOUS ECONOMIC IMPACTS THAT SOME FEEL THE MERE POSSIBILITY OF CONTAMINATION POSES FOR THIS AREA'S AGRICULTURAL INDUSTRIES. WE RECOGNIZE THAT THESE ARE PROBLEMS OF DEEP CONCERN, AND WE WILL BE LOOKING CLOSELY AT THEM DURING THE NEXT SEVERAL YEARS. BETWEEN NOW AND THE END OF SITE CHARACTERIZATION SOME FOUR-TO-FIVE YEARS DOWN THE ROAD, DETAILED STUDIES WILL BE CONDUCTED FOCUSING ON, AMONG OTHER THINGS, POTENTIAL ENVIRONMENTAL AND SOCIOECONOMIC IMPACTS, INCLUDING THE ISSUES IDENTIFIED ABOVE. INCIDENTIALLY, I WANT TO EMPHASIZE THAT BETWEEN NOW AND THE YEAR 1998, NO HIGH-LEVEL RADIOACTIVE WASTE OR SPENT NUCLEAR FUEL WILL BE EMPLACED WITHIN A REPOSITORY, AND EVEN THEN -- IN 1998 -- ONLY RELATIVELY SMALL QUANTITIES WILL BEGIN TO BE RECEIVED. AS I MENTIONED BEFORE, IF DURING THE COURSE OF THESE STUDIES OR FOLLOWING THEIR COMPLETION A SITE IS DEEMED UNSUITABLE IN ACCORDANCE WITH OUR SITING GUIDELINES, IT WILL BE ELIMINATED FROM FURTHER CONSIDERATION AS A POTENTIAL REPOSITORY SITE AND THE SITE WILL BE RETURNED TO ITS ORIGINAL CONDITION.

THE DEPARTMENT OF ENERGY WILL NOT RECOMMEND FOR DEVELOPMENT AS A REPOSITORY ANY SITE WE DO NOT HAVE FULL CONFIDENCE IN; THE NUCLEAR REGULATORY COMMISSION WILL NOT APPROVE ANY LICENSING APPLICATION FROM THE DEPARTMENT THAT IT FEELS IS FLAWED. WE FEEL THAT OVER THE NEXT SEVERAL YEARS OF FURTHER STUDY WE WILL BE ABLE TO ESTABLISH THE SAFETY OF A DEEP, GEOLOGIC REPOSITORY FOR AQUIFERS SUCH AS THE OGALLALA AS WELL AS PROVIDE AMPLE EVIDENCE THAT THE FEARS ASSOCIATED WITH DEVELOPMENT OF A REPOSITORY ARE TRANSITORY IN NATURE AND SHOULD HAVE NO LASTING OR PERMANENT EFFECT ON THE ECONOMY OF A REGION.

AS YOU KNOW, MR. CHAIRMAN, FOLLOWING RECOMMENDATION BY DOE OF ONE SITE FOR THE DEVELOPMENT OF A REPOSITORY, WHICH WILL NOT OCCUR BEFORE 1990, A STATE MAY CHOOSE TO ISSUE A NOTICE OF DISAPPROVAL CONCERNING THE RECOMMENDATION. SUCH A NOTICE WOULD EFFECTIVELY VETO FURTHER WORK ON A REPOSITORY IN THAT STATE UNLESS SUCH A NOTICE IS OVERRIDDEN BY A JOINT RESOLUTION OF BOTH HOUSES OF CONGRESS. THEREFORE, A STATE HAS RECOURSE TO THAT STATUTORY MECHANISM TO PREVENT CONSTRUCTION OF A REPOSITORY WITHIN ITS BOUNDARIES.

THE DRAFT EA FOR THE DEAF SMITH SITE DISCUSSES, IN DETAIL, THE POTENTIAL SOCIAL AND ECONOMIC EFFECTS OF SITE CHARACTERIZATION AND REPOSITORY DEVELOPMENT SHOULD THE SITE BE NOMINATED AND RECOMMENDED. PROJECTED CHANGES IN THE POPULATION, ECONOMY, PUBLIC SERVICES, FISCAL STRUCTURE, AND SOCIAL STRUCTURE OF THE SOCIOECONOMIC STUDY AREA RESULTING FROM PROJECT ACTIVITIES HAVE BEEN ANALYZED. THE STUDY AREA COVERS AN APPROXIMATELY 50-MILE RADIUS (COMMUTING DISTANCE) AROUND THE SITE INCLUDING DEAF SMITH, OLDHAM, POTTER, RANDALL, CASTRO, PARMER, AND SWISHER COUNTIES IN TEXAS AND CURRY AND QUAY COUNTIES IN

NEW MEXICO. LOCAL WORKERS WOULD BE EXPECTED TO COMMUTE FROM THIS NINE-COUNTY AREA. IN-MIGRATING PROJECT WORKERS AND THEIR FAMILIES WOULD ALSO BE EXPECTED TO RELOCATE HERE. IMPACTS ON LOCAL COMMUNITIES DEPEND LARGELY ON WORK FORCE REQUIREMENTS, THE NUMBER OF LOCAL RESIDENTS THAT CAN BE HIRED, IN-MIGRATING WORK FORCE CHARACTERISTICS, AND THE LOCATION PREFERENCES OF IN-MIGRATING WORKERS.

WHILE THERE ARE A VARIETY OF SOCIAL AND ECONOMIC CHANGES ASSOCIATED WITH SITE CHARACTERIZATION AND REPOSITORY DEVELOPMENT, DOE WILL WORK TO MINIMIZE OR AVOID DELETERIOUS PROJECT-RELATED IMPACTS. BECAUSE OF THE LOCAL AVAILABILITY OF MATERIALS AND WORKERS, CONTRACTORS WILL BE ENCOURAGED TO HIRE AND PURCHASE LOCALLY. THIS WILL MEAN THAT FEWER PEOPLE WOULD NEED TO IN-MIGRATE FOR JOBS. ECONOMIC BENEFITS TO A LOCAL AREA COULD BE MAXIMIZED, THEREFORE. JOB TRAINING PROGRAMS FOR AREA RESIDENTS COULD ALSO ALLOW GREATER NUMBERS OF EXISTING RESIDENTS TO BE HIRED FOR REPOSITORY-RELATED JOBS. OTHER MEASURES FOR REDUCING COMMUNITY IMPACTS ARE PRESENTLY UNDER STUDY.

SITE CHARACTERIZATION IMPACTS

OVERALL, IMPACTS DURING SITE CHARACTERIZATION ARE EXPECTED TO BE MINIMAL. THE WORK FORCE REQUIRED DURING SITE CHARACTERIZATION RANGES FROM APPROXIMATELY 220 TO 360 PEOPLE OVER A FOUR-YEAR PERIOD. THE PEAK REQUIREMENT OF 360 WORKERS WILL OCCUR DURING THE EARLY MONTHS OF SITE CHARACTERIZATION. A WIDE RANGE OF SKILLS WILL BE NEEDED DURING THIS PHASE OF THE PROGRAM INCLUDING THOSE OF WELDERS, PLUMBERS, ELECTRICIANS, MINERS, HEAVY EQUIPMENT OPERATIORS,

LABORERS, AND GEOLOGISTS. TOTAL SITE CHARACTERIZATION COSTS ARE ESTIMATED TO BE IN THE ONE-HALF TO ONE BILLION DOLLAR RANGE. THE EXPLORATORY SHAFT AND GEOLOGIC ACTIVITIES OCCURRING DURING THE FOUR-TO-FIVE YEAR SITE CHARACTERIZATION PHASE ARE ESTIMATED TO COST $270 MILLION. ABOUT 70 PERCENT OF THIS WOULD BE USED FOR MATERIALS AND 30 PERCENT FOR SALARIES. MANY SERVICES WOULD BE SUBCONTRACTED AND SUBCONTRACTS ARE LIKELY TO BE SUBJECT TO COMPETITIVE BIDDING. THE TYPES OF SUBCONTRACTS BIDDED WOULD INCLUDE THOSE FOR DRILLING SERVICES, SECURITY SERVICES, AND BUILDING MATERIALS SUCH AS CONCRETE, STEEL, LUMBER, SMALL EQUIPMENT, FUEL, AND OTHER BUILDING SUPPLIES. SINCE SOME OF THESE SERVICES ARE LIKELY TO BE ACQUIRED LOCALLY, BUSINESSES IN THE AREA WOULD BENEFIT FROM THESE TYPES OF PURCHASES. THE AMOUNT OF LOCAL PURCHASES AND THE NUMBER OF LOCAL RESIDENTS WHO WOULD BE EMPLOYED DURING SITE CHARACTERIZATION DEPENDS ON THE MIX OF LOCAL AND OUTSIDE CONTRACTS THAT ARE AWARDED. BASED ON EXPERIENCE AT THE WASTE ISOLATION PILOT PLANT IN NEW MEXICO, THE PERCENTAGE OF LOCAL RESIDENTS WHO COULD BE HIRED DURING THE PEAK SITE CHARACTERIZATION PHASE IS EXPECTED TO RANGE BETWEEN 10 AND 25 PERCENT. APPROXIMATELY 180 ADDITIONAL INDIRECT JOBS WOULD BE CREATED IN LOCAL RETAIL AND COMMERCIAL BUSINESSES DURING THE PEAK PHASE. THESE JOBS ARE CREATED PRIMARILY AS A RESULT OF PURCHASES MADE BY THE WORK FORCE FOR PERSONAL NEEDS (FOOD, CLOTHING, HOUSING, ENTERTAINMENT). ALL OF THE INDIRECT JOBS ARE EXPECTED TO BE FILLED BY LOCAL RESIDENTS. THUS, TOTAL PEAK PERIOD JOBS WOULD NUMBER 540.

In addition to project-related employment and expenditures in the region, there would be other project-related economic changes. For example, the total land required and protected for site characterization activities represents approximately 0.6 percent of Deaf Smith County. The displaced land would be agricultural and, consequently, there may be some associated loss in agricultural revenue, depending on the amount of land withdrawn during site characterization. In view of the relatively small acreage that would be withdrawn from production, lost revenue that would have been generated by crops would be extremely small when compared to the total crop revenue generated in the vicinity. Ordinarily, land acquired by DOE would also generate a change in the local tax base since federal land is exempt from taxation. Congress, however, has provided a grant in lieu of tax provision in the Nuclear Waste Policy Act that addresses the problem of lost tax revenues. I will elaborate on the provision later in my discussion.

Community revenues and expenditures would also be affected during characterization. Since project-related workers and their families are expected to relocate to Amarillo, Hereford, Canyon, and Vega, additional demands for services would be placed on these communities. Approximately 695 new residents are expected to move to the area. The majority of people (442) are expected to relocate to Amarillo, with 160 going to Hereford, 40 to Canyon, 24 to Vega, and 29 to rural areas. Increased requirements for housing, hospital beds, fire protection, and police protection are anticipated

IN SOME OF THESE COMMUNITIES. FOR EXAMPLE, FIVE ADDITIONAL TEACHERS WOULD BE REQUIRED IN AMARILLO AND TWO WOULD BE REQUIRED IN HEREFORD TO MEET THE NEEDS OF NEW RESIDENTS. SOME OF THESE DEMANDS COULD BE MET THROUGH THE USE OF EXISTING SERVICE CAPACITY. FIRE PROTECTION, FIRST AID, AND SECURITY WOULD BE PROVIDED ON SITE AND WOULD BE COORDINATED WITH COUNTY OFFICIALS. THIS SHOULD REDUCE THE DEMAND FOR THESE SERVICES FROM DEAF SMITH AND SURROUNDING COUNTIES.

WHILE SOME ADDITIONAL COSTS MAY BE INCURRED BY THE COMMUNITIES DURING CHARACTERIZATION, GOVERNMENT REVENUES WOULD ALSO INCREASE FROM SEVERAL SOURCES. AMARILLO, HEREFORD, CANYON, AND VEGA COULD RECEIVE ADDITIONAL REVENUE FROM THE SALES TAX ON GOODS AND SERVICES PURCHASED BY THE NEW RESIDENTS AND SITE CHARACTERIZATION CONTRACTORS. ADDITIONAL OCCUPANCY OF THE AREA MOTEL AND HOTEL ROOMS WOULD GENERATE TRANSIENT ROOM TAXES IN THE SOCIO-ECONOMIC STUDY AREA. IN ADDITION, THE STATE AND UNITS OF GENERAL LOCAL GOVERNMENT THAT HAVE TAXING AUTHORITY OVER THE SITE IN DEAF SMITH COUNTY WOULD RECEIVE A GRANT IN LIEU OF TAXES. THE NUCLEAR WASTE POLICY ACT SECTION 116(C)(3) REQUIRES THAT THIS GRANT BE PAID TO STATES AND UNITS OF GENERAL LOCAL GOVERNMENT IN AN AMOUNT EQUAL TO THE TAXES THEY WOULD HAVE RECEIVED IF THIS WERE A PRIVATE INDUSTRIAL ENTERPRISE. THIS GRANT WILL BE MADE TO STATES AND APPROPRIATE UNITS OF GENERAL LOCAL GOVERNMENT EACH FISCAL YEAR UNTIL ACTIVITIES AT THE SITE ARE TERMINATED.

Repository Impacts

If, after site characterization, the Deaf Smith County site is selected and approved for the location of a repository, the social and economic effects would be similar in type to those described above. The magnitude of the impacts, however, would be greater, and would be the subject of detailed analysis in the Environmental Impact Statement required under the Act.

Repository development is a relatively long-term project, with the construction phase lasting approximately seven years and the operation phase lasting at least another 26 years. The work force requirements are fairly stable during repository construction and operation, with a relatively slow decline in the work force during decommissioning.

The work force required during repository construction begins with 540 workers in the first year and increases to 1,370 workers in the fifth year. The peak requirement, for 1,500 workers, occurs during the operations phase of the project. The project would require many types of skilled workers, including carpenters, electricians, ironworkers, laborers, engineers, pipefitters, and teamsters. In addition to repository jobs, it is estimated that 1,500 indirect jobs would be created in local retail and commercial businesses during the project peak.

The local labor force is expected to fill up to 55 percent of the jobs created during the repository-project peak. Thus, up to 1,650 of the 3,000 direct and indirect jobs would be filled by local residents. Amarillo is the largest city near the site and has the greatest diversity of skilled workers;

THEREFORE, IT IS EXPECTED TO PROVIDE MANY OF THE LOCAL WORKERS DURING THESE YEARS. HEREFORD AND CANYON CAN ALSO BE EXPECTED TO PROVIDE A SUBSTANTIAL NUMBER OF WORKERS. THE AVAILABILITY OF TRAINING PROGRAMS MAY HELP PREPARE LOCAL WORKERS TO FILL POSITIONS ON THE PROJECT.

BUSINESS ACTIVITY IN THE AREA IS EXPECTED TO INCREASE DUE TO PURCHASES RELATED TO REPOSITORY DEVELOPMENT AND PURCHASES BY THE WORK FORCE FOR PERSONAL NEEDS--FOOD, CLOTHING, HOUSING, AND ENTERTAINMENT. INCREASES IN TRADE, GOVERNMENT, AND THE SERVICE SECTORS OF THE ECONOMY ARE ANTICIPATED. INCREASES IN DEMAND, PARTICULARLY FOR HOUSING AND OTHER GOODS IN THE SMALLER COMMUNITIES, MAY RESULT IN INFLATIONARY PRESSURES ON PRICES, CAUSING ADVERSE EFFECTS ON LOCAL RESIDENTS, PARTICULARLY THOSE ON FIXED INCOMES. RESIDENTIAL PROPERTY VALUES IN SURROUNDING COMMUNITIES MAY INCREASE AS THE IN-MIGRATING POPULATION PLACES ADDITIONAL DEMANDS ON THE HOUSING MARKET. MOST CONSUMER PURCHASES WILL OCCUR IN THE COMMUNITIES OF AMARILLO, CANYON, HEREFORD, AND VEGA WHERE WORKERS RESIDE.

BASED ON A PRELIMINARY ENGINEERING DESIGN, CAPITAL CONSTRUCTION COSTS ARE ESTIMATED TO BE ABOUT $1.6 BILLION (1983 DOLLARS) DURING THE SEVEN-YEAR CONSTRUCTION PHASE. TOTAL PURCHASES DURING OPERATION WILL BE ABOUT $3.7 BILLION AND SOME PORTION OF THIS WILL BE SPENT IN THE SOCIOECONOMIC STUDY AREA. THESE PURCHASES WILL BE SPREAD OVER THE ENTIRE OPERATING PERIOD.

AS INDICATED IN THE DISCUSSION OF SITE CHARACTERIZATION IMPACTS, REPOSITORY DEVELOPMENT WOULD ALSO AFFECT COMMUNITY COSTS AND REVENUES. A TOTAL OF 2,670 NEW RESIDENTS ARE ANTICIPATED DURING THE PROJECT PEAK. THE

MAJORITY OF REPOSITORY WORKERS AND FAMILIES MOVING TO THE AREA ARE EXPECTED TO LOCATE IN AMARILLO, CANYON, HEREFORD, AND VEGA. THESE NEW RESIDENTS WOULD REQUIRE COMMUNITY SERVICES SUCH AS EDUCATION, POLICE AND FIRE PROTECTION, WATER, SEWER, MEDICAL, AND RECREATION SERVICES. THESE SERVICE DEMANDS WOULD REQUIRE ADDITIONAL EXPENDITURES IN SOME COMMUNITIES.

THE NUCLEAR WASTE POLICY ACT, HOWEVER, PROVIDES FOR TECHNICAL AND FINANCIAL ASSISTANCE FOR ANY HOST STATE REQUESTING SUCH ASSISTANCE. THIS ASSISTANCE IS TO BE PROVIDED WITHIN SIX MONTHS FOLLOWING ISSUANCE OF A CONSTRUCTION AUTHORIZATION FROM THE U.S. NUCLEAR REGULATORY COMMISSION AND FOLLOWING THE INITIATION OF CONSTRUCTION ACTIVITIES AT THE SITE. DOE MUST SEEK TO ENTER INTO AN AGREEMENT WITH THE STATE ON THE AMOUNT OF FINANCIAL AND TECHNICAL IMPACT ASSISTANCE TO BE PROVIDED AND PROCEDURES TO BE FOLLOWED IN PROVIDING SUCH ASSISTANCE. IN ORDER TO RECEIVE THESE PAYMENTS, THE STATE MUST SUBMIT A REPORT TO THE SECRETARY OF ENERGY ON SOCIAL, ECONOMIC, PUBLIC HEALTH AND SAFETY, AND ENVIRONMENTAL IMPACTS THAT ARE LIKELY AS A RESULT OF THE DEVELOPMNENT OF A REPOSITORY AT THE REPOSITORY SITE. DOE WILL PROVIDE FUNDS TO THE STATE IN ORDER TO PREPARE SUCH A REPORT.

IN CONCLUSION, MR. CHAIRMAN, I WISH TO EMPHASIZE OUR COMMITMENT TO FULL AND OPEN PARTICIPATION BY AFFECTED AND INTERESTED PARTIES IN IMPLEMENTING THE PROVISIONS OF THE NUCLEAR WASTE POLICY ACT. IF YOU HAVE QUESTIONS AT THIS TIME, WE WILL BE HAPPY TO ATTEMPT TO ANSWER THEM.

POST-HEARING QUESTIONS AND ANSWERS

RELATING TO THE

FEBRUARY 11, 1985 HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

HERFORD, TEXAS

WITNESS: WILLIAM J. PURCELL

QUESTIONS SUBMITTED BY: SENATOR BENTSEN

Question 1 Area residents claim that DOE's draft environmental assessment (EA) for the Deaf Smith County site is avoidably inaccurate. They claim that simple site inspection and a general tour of the community would have easily eliminated factual errors. Have DOE personnel visited the site and surrounding communities for the purpose of gathering information? Please provide the Committee with a list of all such visits, including but not limited to the position of each person making the visit, the purpose of the visit, and the date.

Answer 1 Numerous DOE and contractor personnel have visited the Deaf Smith County location over the last several years for both technical studies and public interactions. DOE and contractor staff, including Messrs. William Purcell, J. William Bennett, and Barry Gale from OCRWM in DOE-HQ, and many Columbus, OH staff have driven through the site to observe first hand the nature of the land use. Many staff members have visited the area for meetings with local officials, with State and local technical experts, for public information exchanges, and technical field trips. Attached is a chronology of major DOE interactions with Texas which provides many examples of such activities.

DOE acknowledges that there are some inaccuracies in the draft EA. That is the reason for its designation as a draft document, with a comment period, so that such inaccuracies may be brought to DOE's attention. All information and comments from the State and public will be considered in preparation of the final documents in making the final recommendation of three sites for characterization.

The supporting documents referenced in the EA generally cover a 400 square mile area; the 9 square mile site is a part of that area. Thus, many field visits have been made in the area to conduct studies and prepare reports on geologic, environmental, and socioeconomic characteristics.

For example, the geologic surface and subsurface data have been obtained from 10 DOE wells and thousands of oil and gas exploration wells. One DOE well is located just a few miles south of the site. Location of additional data points and their proximity to the site can be found in the draft EA. This includes several hundreds of miles of geophysical lines. Geologic studies also include analyses of public data in the completion of the reports.

Environmental studies also incorporated the site and surrounding region. These studies included land use determinations from aerial photos of the site: drive-throughs across the site to verify photos, aesthetics studies, and verification of residences and buildings. In addition, data were compiled on summer/winter noise assessments, soil and vegetation background radiation, as well as ecosystems and environmental characterization of DOE drill sites.

Data collection to support socioeconomic analyses was extensive (Socioeconomic Data Base Report for the Permian Basin, NUS Corp, 1984). DOE contractors contacted numerous school superintendents, hospital administrators, mayors, and other local officials and agency staff to compile the extensive data base that supported the draft EAs. One site visit was made to Mr. Wayne Richardson's business in Deaf Smith County.

Because of the uniform nature of both surface and subsurface characteristics in the Panhandle, many extrapolations can be made with a high degree of confidence to enable comparison of that area with others under consideration in the program. If the Deaf Smith site is selected for site characterization, more detailed studies will be conducted within the area adjacent to the site.

Question 2 One of the criticisms of the DOE frequently heard is that the agency does not respond to the needs of the public affected by the waste sites. Instead, some observers have concluded that a decision to characterize the Deaf Smith site has already been made and further discussion is useless. This view is buttressed by the DOE's recent refusal to extend the three month comment period on the draft EA's so that those who didn't receive the EAs would have time to review them and those interested in making detailed assessment.

a) On what basis did the DOE decide not to extend the comment period?

b) What specific plan has the DOE made to counteract this skepticism, which could cripple the agency's ability to site a repository?

Answer 2 The Nuclear Waste Policy Act of 1982 (the Act) obligates DOE to promote public participation on the repository site selection process. The Act also establishes specific dates for key decisions, such as the nomination and recommendation to the President of three sites for detailed study (site charaterization). While the Act does not require issuance of draft EAs for public comment, the DOE published draft EAs in the interest of expanding public participation in the repository site selection process. In response to public requests prior to issuance of the EA's, DOE extended the planned comment period from 60 to 90 days. One of the purposes of this extension was to allow for potential delays in mailing and distribution of the large documents. To aid public understanding of the draft EAs, the DOE also conducted 45 interactive briefings in January 1985 and 19 public hearings in February and March 1985 in the six-

States containing the sites under consideration. The March 20, 1985, closing date for the comment period and the subsequent comment response process will result in issuance of the final EAs and the associated nomination and recommendation of sites for characterization this year. The problem of some reviewers in submitting their comments on the draft EAs by the March 20, 1985 closing date are understandable. But a balance had to be struck between providing time for public comment and the need to fulfill Congress' intent that a reasonable rate of progress be maintained toward solving the Nation's nuclear waste disposal problem.

The Department has no specific plan to counteract any skepticism that might exist, but intends, rather, to rely on its extensive outreach and consultation and cooperation activities to document its good record regarding involving the public in all aspects of the nuclear waste program. Examples of such outreach and consultation and coopertion activities are:

The Siting Guidelines:

- DOE considered over 2,000 comments
- Original 45-day comment period extended two weeks, with comments accepted over a month beyond that deadline.

- DOE specifically solicited comments from six affected first repository States and 17 second repository States, as well as 200 public interest groups and 4,000 individuals who had expressed interest in the program.

- Series of public hearings held:

Chicago, IL	March 4, 1983
New Orlearns, LA	March 7, 1983
Washington, D.C.	March 10, 1983
Salt Lake City, UT	March 14, 1983
Seattle, WA	March 21, 1983

- In addition, individual consultation meetings were held with the first repository States:

Lousiana	February 25, 1983
Mississippi	March 3&5, 1983
Utah	March 3, 1983
Texas	March 18, 1983
Nevada	March 23, 1983
Washington	March 25, 1983

- In response to State requests for more time, DOE sponsored a meeting on May 11, 1983, with interested States to set up a framework for additional consultation.

- A second round of personal consultation meetings was held:

Vermont	June 14, 1983
Maine	June 15, 1983
New York	June 16, 1983
Wisconsin	June 20, 1083
Michigan	June 21, 1983
Minnesota	June 27, 1983
Texas	June 27&28, 1983
Nevada	June 29, 1983
Mississippi	June 29&30, 1983
Washington	June 30, 1983
Louisiana	July 6, 1983
Utah	July 8, 1983

- A crystalline States meeting was held on June 29, 1983, in Columbus, Ohio.

- A second plenary session for interested States was held in Dallas, Texas, August 1, 1983.

- Detailed account of all intereaction with interested State/Indian tribes, Federal agencies, and the public is contained in Federal Register Notice 10 CFR 960, December 6, 1984, Volume 49, No. 236, pp. 47718 and 47719.

- Detailed discussion of how DOE responded to all comments received is contained in the same document, pp. 47721 to 47723.

Mission Plan:

- The Act required DOE to submit a draft Mission Plan to the States, Government agencies, public, etc. for comment in April 1984, and then to the Congress two months later, June 1984.

- DOE submitted a working draft in December 1983, to obtain input early from all interested parties and provided a one-month comment period.

- DOE received over 60 sets of responses, comprising over 2,000 comments.

- Many respondents asked for a longer comment period on the formal draft.

- DOE distributed 3,000 copies of draft Mission Plan in early May 1984.

- DOE allowed two-month comment period that closed July 9, 1984.

- DOE received over 100 sets of responses, comprising over 2,500 comments, through September 20, 1984.

- Many comments were received after the July 9 deadline; NRC responded on August 6, 1984; DOT on September 20, 1984.

- DOE is now preparing a Comment Response Document (CRD) to address all comments received, as well as updating the Mission Plan (a CRD is not required by the Act).

Environmental Assessments:

- DOE made available early drafts of EA chapters 2-6 to States before the draft EAs were issued to the States on December 19, 1984.

- Although not required, DOE issued draft EAs for public comment.

- Major State/tribe/public interaction occurred with 45 briefings and 19 public hearings occurring during the months of January, February, and March; individual consultation meetings with States, Indian tribes, and Government agencies are planned following the 90-day public comment period.

Question 3 It seems likely that the DOE will want to characterize a bedded salt site. How close to inevitable is it that a site in Texas will be characterized?

Answer 3 It is difficult to say that it is inevitable, though it is highly likely that a site in Texas will be recommended for characterization. The Act and the General Siting Guidelines encourages the selection of diverse types of host rock and geohydrologic settings for potential repository sites. Such diversity increases the probability that sites suitable for repository development will be available if studies should indicate a generic deficiency in one type of host rock or geohydrologic setting. The nine potentially acceptable sites for which draft EAs were prepared reflect this diversity and include one basalt site, one tuff site, three salt dome sites, and four bedded salt sites (including the Deaf Smith site).

The Deaf Smith bedded salt site offers one of the most advantageous combinations of characteristics and conditions for the successful development of a repository. As a result, DOE proposed that it be recommended as one of the three sites to undergo site characterization.

Question 4 At the hearing and in separate contacts with constituents, it has become clear that there are already adverse effects of DOE activities on the community. Farmers operating on or near the site are unable to plan ahead, not knowing whether they will be forced to move. Real estate values have reportedly decreased markedly in the immediate vicinity of the site.

If the DOE chooses to characterize the Deaf Smith site, do you intend to purchase land at a price that compensates the owner for the decline in land values that occurred before the land was assessed for purchase by the DOE?

Answer 4 DOE will acquire land in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and the Federal Property Management regulations of 41 CFR Part 101-18. These regulations require that the owner receive just compensation based on the estimated fair market value of the property. Fair market value is determined from a region larger than or similar to the site in question to arrive at values unaffected by the proposed project. Displaced persons are also entitled to prompt payment of reasonable costs incurred for moving and related expenses (title recording fees, mortgage prepayment penalties, transfer taxes, etc.). The property owner is not obligated to accept the offered compensation, in which case the fair market value would be decided by the court in a condemnation proceeding.

45-432 O—85——3

Question 5 The DOE places great faith in its ability to construct and operate a repository safely over a long period of time--long enough so that area residents will no longer balk at the risk and consumers of the region's products will be unaffected by the site. You are assuming that these businesses, in the midst of an agricultural crisis, will be able to survive the adjustment period with their customers and their farms intact.

a) What has the DOE done to assess local farmers' abilities to withstand this kind of shock to their systems?

b) What plans does the DOE have to compensate those who are unable to weather the skepticism or whose businesses are significantly injured by perceived threat of contamination?

c) What steps are DOE taking to actively reassure the public that the risk of contamination is low, aside from the public hearings you are planning to hold?

Answer 5a The Deaf Smith EA discusses the importance of agriculture in the local economy and provides information about general trends in agriculture. The EA analyzes a repository's effect on agricultural land, water supply, and economic changes. Impacts resulting from perceived contamination are also discussed. It is assumed that three conditions must be present to negatively affect consumer purchases of agricultural products grown near a repository: (1) the consumer must be aware that a nuclear repository is located in the region where the product is grown, (2) the consumers must be able to clearly identify the product with the locality in which it was grown, and (3) the consumer must identify the existence of a repository with a health hazard that is transmitted through the food chain.

Most of the agricultural products grown in this region are sold outside the study area. In addition, many of the locally grown products, such as sugar beets, wheat, and sorghum are not identified specifically with a particular region. For those agricultural goods that are produced and specifically identified with the region, there could be a short-term change in sales. This type of product, however, represents a very small fraction of the region's agricultural sector. In general, most of the region's agricultural market is export-based and is not likely to experience any significant changes as a result of a repository.

During site characterization, studies of the impact of project activities will be conducted, and monitoring reports will be prepared for State and public review. Any impacts identified during this analysis would be eligible for mitigation funds during repository construction and operation.

Answer 5b Before a Texas site would be chosen to be the site for the first repository, the Act requires the Secretary to make grants to the State to facilitiate review of activities undertaken by DOE to determine, among other things, potential economic impacts. In addition, the Act requires the Secretary to provide financial

and technical assistance to a State in which the NRC has authorized construction of a repository for the purpose of mitigating various impacts due to the development of such repository. The possibility and extent of such impacts on business will be investigated during site characterization and analyzed in the Environmental Impact Statement (EIS). These investigations will be accomplished with the consultation and cooperation of the state and local governments. If it is determined that adverse economic impacts will occur because of repository construction and operation, funds will be available for compensation.

Answer 5c The geologic repository program is subject to the regulations of the Nuclear Regulatory Commission which in turn, implements the repository performance standards of the Environmental Protection Agency. In addition, the U. S. Geological Survey has been closely involved in the repository program for a number of years as an independent technical review and advisory agency. Also, in the transport of nuclear waste, DOE's regulations are at least as stringent as NRC's and DOT's.

The analysis concerning the ability to safely construct and operate a repository (i.e., risk to the public) is described in the EA (Chapter 6.4.1), which references the primary backup

document entitled "Preclosure Radiological Calculations to Support Salt Site Evaluations." This report has been published for the scrutiny of the State and technical community as well as the public in the established manner for scientific analyses.

In addition to the hearings held for public comments on the draft EAs, information concerning the safety of the repository will continue to be available to the public as site characterization studies are undertaken. Studies in the performance assessment area during site characterization will include gathering and analyzing meteorologic, agricultural, demographic, geologic and hydrologic data. The resulting reports will be given to the technical community and the public for comments. In addition, the information will be disseminated in the form of public briefings and information exchanges, fact sheets/brochures written for laypersons, speakers for school and community groups, local seminars, audiovisual materials, exhibits, and related materials available at local information offices.

Through the consultation process with the State, major program documents are subject to rigorous and formal State review. Technical documents are also often peer reviewed; these reviews are published so that interested parties have access to them.

To assure that this, and any future information is available to the public, DOE has opened an information office in Hereford, as well as in Tulia, and is planning an office in Vega, where any member of the public may have access to the documents referenced in the EAs and to reports and literature covering a wide range of related topics. All reports published during site characterization will be available for public scrutiny at these offices.

The attached chronology of DOE interactions presents lists of interactions where DOE has presented and discussed program information, much of it related to risks of contamination.

Question 6 In the written testimony, Purcell stated that most agricultural products grown in the Panhandle are sold outside the region and are not identified with Deaf Smith County. There is of course, a clear exception to that general observation, which is Arrowhead Mills. Ads for Arrowhead Mills products highlight where the products are grown and there is a Deaf Smith county cookbook that is based on Arrowhead products. In addition, these products are organically grown and sold in health-food stores, where customers have a heightened sensitivity to potential contamination. The DOE's response to this potentially devastating problem faced by Arrowhead is essentially that "time will tell." Unfortunately, competition for agricultural products these days is keen and the 1 to 13 years needed for consumers to adjust to the repository, as indicated in the draft EA will probably signal the end of this vital, local company.

Do you believe that, under unique circumstances such as these, the DOE should do more to protect the viability of a business? What plans has the DOE made to accommodate this kind of situation?

Answer 6 Section 116(c)(2)(A) of the Act provides technical and financial assistance to a State to mitigate impacts associated with repository development. The State is required to submit to DOE an impact assistance request based on an assessment of repository impacts. This request will serve as the basis for a negotiated agreement between DOE and the affected State. If businesses in the region are adversely affected by a repository, this could be documented in the State's impact assistance request. Impact mitigation funds could, then, be made available through Section 116(c)(2)(A).

High-level waste would not be disposed of in a repository until 1998. Until then, studies would be continued to determine any public health and safety, environmental, and socioeconomic

impacts. Should a particular business suffer economic loss as a result of repository development, compensation for this loss could be included in the assistance provided under Section 116(c)(2)(A).

DOE will continue to refine its calculations regarding the public health and safety risk associated with a repository. Reviews of work done to date do not indicate disagreement with the finding that radiological exposure to the public or to crops in an extremely small fraction of background radiation in the area. DOE will work with all affected parties to insure that the public is aware of the relative level of risk.

Question 7 In the draft environmental assessment the DOE released in December, the discussion of the Exploratory Shaft Facility--ESF--and site characterization states:

> "The ESF site and acess roads to the site will disrupt irrigation practices. The exploratory shaft site is located on cropland that was irrigated by a pivot irrigations system in the summer of 1982. It has not been determined whether this pivot system can be moved. If not, the displacement of a $75,000 to $100,000 piece of equipment (pivot system) will be incurred by the farmer."

a) When were you planning on deciding whether the pivot system needed to be moved?

b) Have you determined whether the change in the size and shape of the field would render the new pivot system useless?

c) Do you really believe it is equitable for the farmer involved, who in good faith invested in the expensive pivot system not three years ago, to incur the cost of moving the pivot?

d) Is this approach typical of how the DOE intends to handle the financial burden it will imposed on area residents?

e) If so, do you believe that this is truly an equitable system?

Answer 7 The decision on whether or not the particular pivot system will be moved will be made when detailed field activity plans are finalized. This should occur in the fall of 1985. If it is determined that DOE activities will require the system to be moved, the farmer will be fully compensated. Land acquisition regulations require DOE to offer to purchase the entire property where the acquisition of a part of a property will leave the owner with an uneconomic remnant. The purchase of the property

would be accomplished through appropriate acquisition procedures described in 41 CFR Part 101-18. It is the intent of DOE to minimize or avoid adverse economic impacts to local residents which occur as a result of site characterization.

DOE will be following land acquisition procedures identical to those followed by Federal agencies in acquiring private lands for parks, water reclamation projects, and transportation routes, and believes that these procedures provide for equitable treatment of those whose land the Federal Government must acquire.

Question 8 In the draft EA, the DOE states that large amounts of salt will be excavated and stored on site.

a) What environmental protection standards do you intend to meet for salt storage?

b) The draft EA states that liners will be used to avoid ground water contamination. As those familiar with The High Plains of Texas are aware, the most salient weather feature of the region is the wind. Even small quantities of salt strewn over a large area can be devastating to a farm economy like the Panhandle's. What would the DOE do to protect against the risk?

Answer 8a The methods that will be used to protect the physical environment and biota will comply with National Pollutant Discharge Elimination System (NPDES) requirements, and will include, but not be limited to, soil and ground water protection, runoff and drainage protection, and other methods as appropriate.

Answer 8b Methods to prevent salt from being blown over farmland during severe windstorms are described in at least two documents; Ver Planck 1985, and WIPP 1984.

It is recognized that the most striking weather feature of the High Plains of Texas is the wind. However, when salt is exposed to the weather, a hard surface crust forms in a few days, which tends to shed rainwater and prevent wind erosion (WIPP 1984). The experience of the salt industry indicates that stockpiled salt is not a source of windblown particles, and crusting can be

accelerated by wetting the pile (Parsons-Redpath, 1984). Where the humidity is low, as in Texas, the crust formation will occur more rapidly if the salt pile surface is sprayed with water. Loss of salt storage piles from high winds, such as during a tornado, is not expected to occur.

It is possible, however, that during salt handling, namely transfer of the salt from hoist to trucks or other conveyances and salt pile buildup (pile working surface), salt particles may become windblown. Particle suspension could be prevented, if required, through use of water sprays and/or interrupting salt pile buildup during high wind conditions. A contingency measure which could be applied, though not expected to be required, is covering the salt piles with weighted-down plastic sheets or tarpaulins.

Attempts to obtain mass emission and atmospheric dispersion estimates from salt handling and storage operations for Texas, have been hindered by a lack of input data. No salt particle dispersion modeling studies for this type of operations have been previously reported. Values stated in the draft EAs were obtained from earthmoving operations, which do not provide a close analogy, because the salt particles were assumed to be

small (15.5 micron). Since this preliminary work was carried out in the EAs, the NUS Corporation measured salt particle size distribution at the International Salt Company Retsof Mine, Retsof, N.Y. According to preliminary results, 97 percent of the particles were larger than 15 microns, and a large fraction was in the 90 micron range.

As indicated in Section 5.2.5 of the draft EAs, most salt deposition during the repository phase will occur in the immediate vicinity of salt storage piles, rapidly decreasing with distance. The salt deposited during site characterization and repository development is expected to occur within the boundaries of the facilities. These estimates are compatible with observations at existing salt and potash mining facilities (see Parson-Redpath, 1984), and at U.S. DOE defense and experimental facilities where salt is, or has been mined, and is presently being stored in stockpiles (Intera, 1978; WIPP 1984).

Actual data from these sites show that any impacts of environmental significance which have been observed in the immediate vicinity of salt operations, decrease rapidly with distance. Thus, even the small area of dispersion of salt

particles that is stated in the draft EA appears to be larger than the area actually impacted by the project.

Atkins, J., 1984 — International Salt Company, Clark Summit, PA. (Personal Communication, December 11, 1984)

Intera, 1978 — Radiological Waste Storage Analysis, prepared for Sandia Laboratories. Intera Environmental Consultants, Inc., 11511 Katy Freeway, Houston, TX 77079, Fall 1978.

Parsons-Redpath, 1984 — Preliminary Salt Control Plan, prepared by Parsons-Redpath, December 1984.

Ver Planck, 1958 — Salt in California, California State Division of Mines, Bulletin No. 175, p. 57, March 1958.

WIPP, 1984 — SPDV Shaft Outfitting and Underground Excavation, Waste Isolation Pilot Plant, January 1984.

Question 9 In the written statement, you mention the grants-in-lieu-of-taxes Deaf Smith County will receive. As you may be aware, however, the closest town to the site is Vega. Vega is not only a small town with a population of 900, it is also in Oldham County and therefore not eligible to receive grants-in-lieu-of-taxes. Should the DOE decide to characterize the Deaf Smith site, people may move to Vega and place a significant strain on the community's social services. Does the DOE have a specific plan for compensating Vega for the additional costs incurred. If so, please describe in detail.

Answer 9. The Act does not provide impact mitigation funds during the site characterization phase. Mitigation funds for service impacts, however, will be available during repository development for affected communities. Vega would be included in this assistance as they are likely to be affected by a repository development.

The Act specifies a number of mechanisms for providing funds to State and local units of government during various phases of the repository program. Grants are provided during site characterization studies to assist in review and monitoring of DOE work and to enhance participation in the consultaton process. Funds are also available for development of impact reports so that mitigation measures can be in place during repository construction and operation.

The Act is silent on the issue of providing funds for mitigation of impacts during the site characterization phase. We feel Congress did not intend to specifically preclude impact funding

at the site characterization stage, but more likely did not foresee that the site characterization studies would result in significant adverse mitigable impacts. DOE's preliminary analysis concludes that the impacts of site characterization activities on any community in the study area, including Vega, are minimal. This analysis will be reviewed in light of comments received on the draft EAs, and DOE will work closely with Vega city leaders to minimize any impacts that might occur. If Vega, or other such communities, identify specific areas where financial assistance would help offset impacts from siting studies, DOE would work with them in determining whether there are avenues of funding available.

In addition to possible mitigation funds, the city of Vega has access to grant funds to hire experts to review DOE documents and decisions, such as the draft EAs, and develop recommendations to DOE. Vega was provided funds through the grant with the State of Texas for this purpose. We will continue to meet with the communities and the States in the future to discuss this topic, as well as others of interest to the local area.

Question 10 It is my understanding that, based on the draft EAs, the DOE selected the Deaf Smith site over the Swisher County site primarily because the Deaf Smith was farther away from a town with a population of at least 2,500, which excludes the closest town, Vega. In other respects, how similar are the sites and what is the likelihood that Swisher could be characterized instead of Deaf Smith?

Answer 10 A comparison between the two sites can be made based on general categories taken from the DOE siting guidelines. For each of the categories, the associated characteristics for the Deaf Smith and Swisher sites are essentially the same.

a. Geohydrology - both sites are in the same subsurface regional system and meet the required ground water travel time of 10,000 years from the disturbed zone to the accessible environment.

b. Geochemistry - because of the similarity in geologic composition and sequence, both sites have the capacity for containing radionuclide releases.

c. Rock characteristics - the host rock at each site is capable of accommodating the thermal, chemical, mechanical, and radiation stresses to be induced by repository construction and operation. However, there are minor geological differences between the two sites such as depth

in the host salt bed, the number of interbeds in repository horizon, and the thicknesses of the same formations at the different locations.

d. Climate - because the sites are only separated by about 50 miles, the climate is essentially the same.

e. Erosion - the repository horizon at each site is grater than 2,100 feet; consequently, surficial erosion rate, should affect neither site.

f. Dissolution - although the distance of the two sites from active dissolution fronts is different (the Swisher site is approximatley 21 miles from the Eastern Caprock Escarpment and the Deaf Smith site is approximatley 48 miles), there is no evidence that either site would be subjected to significant dissolution in relevant time periods.

g. Tectonic - both sites are in a stable tectonic region.

h. Human Interference/Natural Resources - other than potable ground water withdrawn for farming practices, there are no known commericially extractable materials at either site.

i. Site Ownership and Control - both sites are presently privately owned, and DOE would have to acquire rights to the property before site characterization.

j. Surface Characteristics - topography of both sites are generally flat and should not present any construction problems. There are minor differences between the sites such as local creeks which drain the area, number and location of playas, and nearby highways.

k. Offsite Installations and Operations - atomic energy defense activities are not in proximity to either site.

l. Environmental Quality - the quality of the environment at either site could be protected to prevent any significant adverse impacts. No Federal lands are located in close proximity to either of the two sites.

m. Socioeconomic Impacts - the affected area around each site will have significant adverse impacts caused by repository construction and operation mitigated by social impact assistance grants.

There are only two guideline conditions which discriminate between the Deaf Smith County and Swisher County sites. Of these two conditions, one favroable condition under the Preclosure Radiological Safety Guidelines concerned the remoteness of the site from highly populated areas. The Deaf Smith County site is slightly more favorable under this guideline condition because the town of Hereford is 27.2 kilometers (17 miles) from the Deaf Smith County site while the town of Tulia is only 8 kilometers (5 miles) from the Swisher County site. The other favorable condition under the Preclosure Environment, Socioeconomic, and Transportation Guidelines concerned the proximity to regional highways, mainline railroads, or inland waterways that provide access to the national transportation system. The Swisher County site is slightly more favorable under this guideline condition because it is within 10 kilometers (13 miles) of a regional highway and 10 kilometers (6 miles) of a railroad that provides access to a national transportation system. The Deaf Smith County site is 21 kilometers (13 miles) from a regional highway and 42 kilometers (26 miles) from a railroad that provides access to a national transportation system.

Of the two guideline conditions that distinguish the Deaf Smith County and Swiwsher County sites, the Preclosure Radiological Safety grouping concerning the proximity of the sites to population centers was judged by DOE to be more important than the difference in the Preclosure Environment, Socioeconomic, and Transportation grouping concerning the proximity of sites to the national transportation system. Therefore, the Deaf Smith County site is preferred by a small margin.

Question 11 DOE is planning on constructing, operating, and decommissioning the Nation's first high-level nuclear waste site. Since this a "first," people are expectedly concerned about the safety of these processes.

a) How much of what the DOE intends to do has not been done before? Please provide a breakdown of each significant activity in construction, operation and decommissioning and indicate whether any aspect of that activity has been attempted before; state the date(s), the circumstances, similarities and differences to what DOE intends to do with the waste repositories, the outcome of the previous experience, the names of the parties involved, the cost and any other information relevant to this inquiry.

Answer 11. The Act requires the Department to site, design, construct, operate and decommission a repository for permanent disposal of high-level nuclear waste. The technology for exploration (siting), construction, and operation of underground facilities, such as mines, is well known and the development of a repository should directly benefit from this technology base. However, the Act requires the Department to develop the repository under strict regulations promulgated by the Nuclear Regulatory Commission and the Environmental Protection Agency. These regulations require the Department to demonstrate that nuclear waste placed in the repository will be isolated from the environment for thousands of years. Although such a demonstration has not been done before, the Department expects that it will be able to provide the necessary analysis to fully comply with the regulations.

In regard to actual development of a repository, there are numerous facilities with work currently underway in the United States and elsewhere in the world, leading toward the operation of a repository.

Examples of a few such facilities are as follows:

Facility	Country	Function
Waste Isolation Pilot Plant (WIPP), bedded Salt	USA (near Carlsbad, N.M)	Disposal of Transuranic Waste and experiments with Defense high-level waste.
Near Surface Test Facility (NSTF), basalt	USA (on Hanford Reservation, near Richland, WA)	Simulated tests of nuclear wastes in basalt formations. Facility built in side of a mountain on the Hanford Reservation.
Climax Mine, granite	USA (On NTS near Las Vegas, NV)	Actual tests with spent nuclear fuel in a granite rock formation constructed 1,200 feet below the surface

Asse Mine, domal salt	Federal Republic of Germany (FRG)	Disposal of low level waste experiments with high-level waste.
Gorleben, domal salt	Federal Republic of Germany (FRG)	Repository for permanent disposal of high-level waste under test and construction.
Stripa, granite	Sweden	Test facilities in granite about 1,000 feet below surface.
MOL, clay	Belgium	Test facility in clay about 800 feet below surface.

These facilities and others will provide a strong technological base for DOE to proceed to final selection and development of a repository site.

In order to more fully respond to the question, additional information needs to be compiled. It is expected that this information will require an additional 2 weeks; the information will be provided by March 29, 1985.

Question 12 The testimony submitted at the hearing included a statement that the DOE intends to encourage contractors to hire and pruchase locally. As you know, this issue became the focus of heated conflict at the Waste Isolation Pilot Project in New Mexico.

a) Please indicate specifically how DOE intends to "encourage" this behavior.

b) What steps has DOE taken at other DOE-contractor facilities to promote local hiring and purchasing? What have the results been in terms of local sales and employment?

Answer 12a DOE is bound by Federal Procurement Law to advertise, accept bids and hire a contractor based on bid and/or technical proposal. DOE will make available to local businesses complete descriptions of contract work required by the project and will meet with local leaders to describe the project. Some local businesses will probably have locational or resource availability advantage over other prospective bidders. In addition, it is possible for DOE and/or the general site contractor to break down the contracts into smaller contracts to make it more feasible for local contractors to bid the work. This approach was used at the WIPP project.

Answer 12b In addition to the approach discussed in (a), there has been a stated DOE policy of encouraging local hiring and pruchases at the WIPP site that includes the following:

- procurement workshops for local business people;

- o project offices have been opened by DOE and contractors in the local community;
- o project data are made readily available to local businesses;
- o 90 percent of the skilled crafts workers have been locally hired, to date.

Another means to encourage local hires, if a union contractor receives a bid award, would be to help arrange for a union office in a nearby local community.

In addition, DOE is considering measures to enhance the participation of local contractors at the recommended repository sites.

Question 13 The written testimony also alluded to training as a means of increasing the accrual of benefits to community residents.

a) Has the DOE prepared a budget for job training programs for any of the sites under consideration, particularly the Deaf Smith and Swisher sites?

b) Had the DOE developed any specific job training programs? If not, on what basis will these programs be developed and how will local needs be taken into consideration?

Answer 13a No. The budget for a specific job training program would be developed as part of the impact mitigation plan. This mitigation plan will be prepared in consultation with state and local officials during site characterization studies and will likely include measures to ensure there are training opportunities for local residents.

Answer 13b DOE has collected data on types of job training programs used in the public and private sectors, for use in developing a repository training program. DOE has been involved in training programs at the Piketon Centrifuge Plant and the Oak Ridge National Laboratory. Plans will be developed for the repository program in consultation with local and State officials.

Question 14· Based on currently published DOE plans to build, operate, and shut down the waste site, it is clear that DOE activities will follow a boom-and-bust cycle, which can be devastating to vulnerable agricultral economies in a sparsely populated area. Does the DOE have any plans to minimize the ebb and flow in employment retail activity so local residents and businesses could best respond to DOE activities without suffering irreparable damages?

Answer 14 The work force schedule shown in Figure 5-26 (Deaf Smith draft EA) does not show large fluctuation between construction and operations work force, as has been the case in other energy-related facilities. Further, most energy-related facilities have a high employment level for only a few years, while the repository would employ more than 1,000 persons for at least a 34-year period. There would be a substantial reduction in the work force after this period, but careful planning should minimize any real disruption to the local economy. The construction peak is 1,370; and the operations peak is 1,500. There is also a 5-year build-up period associated with each phase. When specific construction and operation tasks are defined and scheduled, the design engineering can be requested to devise methods and schedules to further reduce fluctuation. This approach is advantageous to the general contractor and the local communities.

CHRONOLOGY OF MAJOR DOE INTERACTIONS WITH TEXAS

March 1, February 26 and 28, 1985	DOE conducts hearings on draft environmental assessments in Tulia, Hereford, and Austin.
February 12, 1985	DOE-SRPO mails approximately 1,800 announcements of hearings on draft environmental assessments.
February 11, 1985	DOE-HQ presents testimony for U.S. Senator Lloyd Bentsen's Environment and Public Works Committee hearing in Hereford.
February 1, 1985	DOE-SRPO sends notice of public hearings to about 1,800 people on the public information mailing list.
February 1, 1985	DOE/ONWI information offices open in Tulia and Hereford.
January 22, 1985	The Texas Water Development Board issues final rules for drilled or mined shafts (Chapter 361, Subchapter A, TAC 361.1-361.19), with changes to the proposed text issued October 5, 1984.
January 14, 15, and 16, 1985	DOE conducts briefings on the draft environmental assessments for state and local officials and the public. The briefings are held in Austin, Tulia, and Hereford.
December 28, 1984	DOE-SRPO mails final siting guidelines, the notice of availability of the draft environmental assessments, and announcement of public meetings and hearings to approximately 1,900 news media representatives and people on the public information mailing list in Texas, Utah, Mississippi, and Louisiana. On December 18, 1984, DOE-SRPO sends copies of the final siting guidelines to information offices and public libraries near each of the sites.
December 21, 1984	The Texas High Plains Water Conservation District No. 1, in a letter to the Secretary of Energy, expresses opposition to the recommendation of Deaf Smith County as a site for further study.
December 20, 1984	U.S. Representative John Bryant informs the Secretary of Energy that he has requested an Energy Conservation and Power Subcommittee hearing on the selection of Deaf Smith County for further study as a potential repository site.

December 20, 1984	DOE-HQ responds to the December 11 letter from the governor of Texas regarding review of Identification of Sites Within the Palo Duro Basin, Volumes 1, 2, and 3.
December 20, 1984	DOE issues draft environmental assessments for the nine sites considered for the first repository. Secretary of Energy and Director of OCRWM hold news conference to describe the documents and the proposals to nominate five, then recommend three sites for detailed site characterization.
December 19, 1984	DOE-HQ representatives deliver draft environmental assessments to Congressional delegations of six states with potentially acceptable sites. DOE-SRPO representatives deliver draft environmental assessments and brief governors and key contacts in the salt states.
December 19, 1984	DOE-SRPO mails letters and copies of EAs to property owners with land in the potentially acceptable repository sites and invites them to participate in the public comment process.
December 19, 1984	ONWI representatives distribute information packets regarding release of the EAs to the media in Salt Lake City, Austin, Baton Rouge, and Jackson.
December 14, 1984	DOE-SRPO mails notice of intent to issue draft environmental assessments to approximately 1,900 people on the public information mailing list. The notice contains an 800 number for ordering copies.
December 11, 1984	Texas governor requests that Secretary of Energy provide an additional 45-day period for review of final Identification of Sites Within the Palo Duro Basin, Volumes 1, 2, and 3.
December 10-11, 1984	DOE-SRPO representative briefs a state legislator-elect and local officials about the final Texas site identification report (DOE-CH10) in Deaf Smith, Swisher, and Oldham counties.
November 30, 1984	Letters and copies of the final Texas site identification report (DOE-CH10) were sent to affected property owners and officials in Swisher, Deaf Smith, and Oldham counties. A news release about the report was also mailed.

November 29-30, 1984	Copies of the final edition of the Texas site report, along with responses to comments on the draft, are mailed to the Texas Nuclear Waste Programs Office; local officials in Deaf Smith, Oldham, and Swisher counties; and affected property owners.
November 27, 1984	Secretary of Energy responds to Texas governor's letter of October 9, 1984.
November 15-16, 1984	Officials from Louisiana, Mississippi, Texas, and Utah meet with DOE, NRC, and ONWI representatives in Columbus, Ohio, for the eighth bimonthly meeting to discuss topics including the revised financial assistance guidelines, DOE/NRC site specific agreement, socioeconomic analysis in the EAs, status of salt management, and proposed plans for EA briefings and hearings.
October 24, 1984	DOE-SRPO sends socioeconomic data to city attorney of Vega, Texas.
October 9, 1984	Governor of Texas writes to the Secretary of Energy questioning the current site selection process, and requesting responses to previous letters regarding site narrowing in Texas.
October 3-4, 1984	DOE-HQ holds meeting for first repository states in Atlanta, Georgia, at which the mission plan, defense waste commingling, liability and the Price-Anderson Act, environmental assessments, and the EA interaction plan are discussed.
October 3, 1984	DOE-SRPO sends responses to comments by STAND on Permian Basin location recommendation report (DOE/CH/10140-2).
September 14, 1984	DOE-SRPO sends response to comments by STAND on the Permian Basin area geological characterization report (DOE/CH/10140-1).
September 10-12, 26 and 27, 1984	U.S. Representatives Jack Hightower, Kent Hance, the Chairman of two House subcommittees, and the Attorney General of Texas send letters to DOE questioning the Secretary of Energy's remarks regarding the position of the Texas sites.
September 10-11, 1984	Representatives of states being considered for the first repository meet with DOE in Warrenton, Virginia, to discuss communication methods.

August 31, 1984	DOE-SRPO sends Texas Nuclear Waste Programs Office meeting summaries and handouts from three meetings with NRC during August on rock mechanics, geochemistry, and information management systems.
August 28 and July 31, 1984	DOE writes Texas Nuclear Waste Programs Office and the Texas governor clarifying identification of potentially acceptable sites in Texas and tracing the notification process that included letters dated February 2, 1983, April 15, 1983, and issuance of the draft site identification reports dated February 1984.
August 16, 1984	On behalf of the Texas Department of Agriculture, the Nuclear Waste Programs Office requests DOE material on the socioeconomic impact of a repository in Texas.
August 9, 1984	SRPO and ONWI staff members meet with Texas State Historic Preservation Office representative to discuss need for additional studies to comply with National Historic Preservation Act and when such studies should begin.
August 3, 1984	DOE briefs the Texas House-Senate Joint Committee on Hazardous Waste Disposal in Austin. Topics include general program overview and responses to various issues raised by the committee. The briefing package included responses to major issues raised by the committee and commenters at the April 27, 1984, hearing in Canyon.
August 1-2, 1984	Officials from Louisiana, Mississippi, Texas and Utah meet with DOE, NRC, and ONWI representatives in Columbus, Ohio, for the seventh bimonthly meeting, to discuss topics including transportation issues, the mission plan, siting guidelines, environmental assessments, and land acquisition.
July 30, 1984	Office of Civilian Radioactive Waste Management director meets with Texas governor at National Governors' Association meeting in Nashville, Tennessee.
July 17, 1984	DOE-SRPO responds to May 16, 1984, letter from attorneys for POWER and STAND concerning information exchange.

July 3, 1984	Texas Senate and House approve concurrent resolution supporting the Texas Nuclear Waste Program Office in consultative and review activities with DOE and in comments provided on the screening report (Identification of Sites within the Palo Duro Basin: Volume I--Palo Duro Location A (Deaf Smith County) and Volume II--Palo Duro Location B (Swisher County) (BMI/ONWI-531), February, 1984).
July 2, 1984	Texas Nuclear Waste Programs Office requests clarification of basis for site identification process in Texas.
June 28, 1984	DOE-SRPO sends Texas Nuclear Waste Programs Office Record of Meeting of the ONWI Program Review Committee held on May 21-22, 1984.
June 26, 1984	DOE-SRPO mails the June, 1984, EA working drafts for Louisiana, Mississippi, and Utah to Texas Nuclear Waste Programs Office.
June 26, 1984	DOE-SRPO sends Texas Nuclear Waste Programs Office summary of June 14-15, 1984, performance assessment briefing by NRC for DOE-SRPO.
June 20, 1984	DOE-SRPO sends Texas Nuclear Waste Programs Office list of materials sent to Texas libraries.
June 19, 1984	DOE-SRPO sends Texas Nuclear Waste Programs Office summary of May 23, 1984, DOE/NRC meeting to assist Fluor Engineers, Inc., view appropriate safeguards and security plans.
June 15, 1984	Texas Nuclear Waste Programs Office asks to attend June 22, 1984, NRC meeting to further disucss NRC's action on DOE siting guidelines.
June 15, 1984	DOE-SRPO sends latest EA working drafts for Deaf Smith and Swisher Counties to Texas Nuclear Waste Programs Office.
June 14-15, 1984	Representatives of Texas and other salt states attend performance assessment briefing for NRC in Columbus, Ohio.
June 4 and 11, 1984	ONWI sends copies of several reports to Texas Legislative Council as requested.
June 1, 1984	Officials from Louisiana, Mississippi, Texas, and Utah meet with DOE representatives for a briefing on the draft mission plan in Washington, D.C.

45-432 O—85——4

May 31, 1984	Officials from Louisiana, Mississippi, Texas, and Utah meet with DOE, ONWI, and NRC representatives in Washington, D.C., for the sixth bimonthly meeting, to discuss topics including land acquisition, transportation, and environmental assessments.
May 30, 1984	Texas Nuclear Waste Programs Office provides review of draft site identification report (DMI/ONWI-531).
May 30, 1984	DOE sends letter to the manager of the High Plains Underground Water Conservation District No. 1 including responses to comments made by members of the district board at the May, 1983, public hearing in Hereford and written comments sent to DOE on February 13, 1984.
May 25, 1984	Texas House-Senate Joint Committee on Hazardous Waste Disposal sends letter to DOE requesting a briefing to address various issues raised by the committee.
May 21, 1984	DOE-SRPO sends to Texas Nuclear Waste Programs Office draft interagency agreement between DOE and the U.S. Corps of Engineers for review and comment.
May 17, 1984	DOE-SRPO sends May working draft of environmental assessments to the Texas Nuclear Waste Programs Office for preliminary review.
May 15-18, 1984	A representative of the Texas Nuclear Waste Programs Office attends review of hydrology data for NRC in Columbus, Ohio.
May 15, 1984	Letter from Texas Nuclear Waste Programs Office outlines review conducted by state of BMI/ONWI-531 and requests extension of review period to May 31, 1984.
May 9, 1984	DOE-SRPO sends copies of the draft Mission Plan, Volumes I and II, to the Texas Nuclear Waste Programs Office for review and comment.
May 8-9, 1984	Representatives of NRC, Louisiana, Mississippi, Texas, and Utah attend a training workshop in Columbus, Ohio on the use of the ONWI/Technical Data Management System.
May 3-9, 1984	Representatives from Hereford request that DOE consider establishing an information office in Hereford, Texas.

May 1 and 3, 1984	Information exchanges are held in Vega and Tulia to discuss the recent narrowing to 9-square-mile sites in Deaf Smith and Swisher counties.
April 27, 1984	DOE-HQ representative makes a presentation at a public hearing on high-level nuclear waste in Canyon conducted by the House-Senate Joint Study Committee on Hazardous Waste Disposal.
April 25, 1984	DOE-SRPO responds to Texas Nuclear Waste Programs Office request of April 11 to participate in federal agency interaction on land acquisition.
April 24, 1984	DOE-SRPO forwards proposed plan for public participation prior to, during, and after release of draft environmental assessments to the Texas Nuclear Waste Programs Office.
April 24, 1984	DOE-SRPO sends letters to officers of STAND and POWER providing information about U.S. acceptance of foreign nuclear waste.
April 23 and 26, 1984	DOE-SRPO and ONWI representatives attend Texas Nuclear Waste Programs Office hearings on nine-square-mile site identification reports in Tulia and Hereford.
April 23, 24, and 26, 1984	DOE-SRPO representative makes presentations to the Rotary and Kiwanis Clubs in Hereford and the Desk and Derrick Club in Pampa.
April 17, 1984	DOE-SRPO responds to letters of March 7 and 23, 1984, from Hector and Assoc. of Albuquerque, NM, representing POWER and STAND, requesting additional information, clarification, and policy statements.
April 12, 1984	DOE-SRPO representative makes presentation to the Amarillo Chapter of the American Institute of Mechanical Engineers in Amarillo, Texas.
April 11, 1984	DOE-SRPO requests comments on draft of Isolating High-Level Nuclear Waste: The National Program: Studies in Texas, from the Texas Nuclear Waste Programs Office.
April 11, 1984	Texas Nuclear Waste Programs Office asks to participate in the establishment of procedures to acquire land or water rights for the nuclear waste repository program.

April 3, 1984	DOE-SRPO and ONWI representatives conduct meeting in Canyon, Texas, to plan next information exchanges in Panhandle.
April 2, 1984	DOE-SRPO representative makes presentation to the Panhandle Chapter of the Texas Society of Professional Engineers in Amarillo, Texas.
March 30, 1984	DOE-SRPO sends copies of the March working draft of environmental assessments to the Texas Nuclear Waste Programs Office for early review.
March 29-30, 1984	Officials from Louisiana, Mississippi, Texas, and Utah meet with DOE, ONWI, and NRC representatives in Columbus, Ohio, for the fifth bimonthly meeting, including discussions on the environmental assessments, the mission plan, technical data, and the public information program. ONWI provides organization charts and list of major contractors to the states.
March 29, 1984	DOE-SRPO sends initial version of the Salt Repository Project Technical Data Handbook (March, 1984) to Texas Nuclear Waste Programs Office.
March 27, 1984	DOE-SRPO transmits records relating to DOE's program in the Texas Panhandle to attorney for STAND and POWER as requested on December 19, 1983.
March 20-21, 1984	DOE holds news conferences, briefings, and public availability sessions for public officials, property owners and others, in Amarillo, Tulia, and Hereford, Texas, to explain the identification of possible study sites in the Texas Panhandle.
March 20, 1984	DOE issues news release on the identification of possible study sites in Deaf Smith and Swisher counties.
March 19, 1984	DOE briefs congressional delegations from Texas in Washington, D.C., on the identification of possible study sites in the Texas Panhandle.
March 19, 1984	DOE sends letters to Texas Nuclear Waste Programs Office, local officials, property owners, and operators in the vicinity of the identified nine-square-mile sites in the Panhandle, announcing the identification of possible study sites in Deaf Smith and Swisher counties and the public availability sessions on March 20 and 21, 1984.

March 19, 1984	DOE sends 50 copies of Identification of Sites within the Palo Duro Basin: Volume I--Palo Duro Location A (Deaf Smith County) and Volume II--Palo Duro Location B (Swisher County) (BMI/ONWI-531, February, 1984) to the Texas Nuclear Waste Programs Office for review.
February 29, 1984	Texas governor creates a task force on hazardous waste disposal.
February 28, 1984	DOE-SRPO provides detailed explanation of proposed field studies to Texas Nuclear Waste Programs Office.
February 24, 1984	A Texas Department of Agriculture advisory panel on the selection of a site for disposal of high-level nuclear waste meets for the first time.
February 22, 1984	DOE-SRPO sends Texas Nuclear Waste Programs Office a proposed plan for public information events related to release of the draft Identification of Sites Within the Palo Duro Basin: Volumes I and II (BMI/ONWI-531).
February 16, 1984	ONWI representative speaks to American Chemical Society in Canyon, Texas.
February 15, 1984	DOE-SRPO sends Texas Nuclear Waste Programs Office the Office of Civilian Radioactive Waste Management responses to NRC comments on Guidelines for Recommendation of Sites.
February 15, 1984	ONWI representative speaks to American Society of Civil Engineers in Amarillo, Texas.
February 14, 1984	ONWI representative speaks to American Institute of Chemical Engineers in Borger, Texas.
February 13, 1984	DOE-SRPO forwards January 23 response to December 12 letter from Oldham County Commissioners to chambers of commerce, mayors, and judges in Swisher, Deaf Smith, and surrounding counties.
February 13, 1984	DOE-SRPO provides the Texas Nuclear Waste Programs Office with USGS comments to NRC on siting guidelines.
February 7, 1984	The director of the Texas Nuclear Waste Programs Office submits comments on Process of Interaction Between SRPO and Salt States on EA Preparation.

February 2, 1984	DOE sends copies of the final Permian Basin Socioeconomic Data Base Report (ONWI-463) to the Texas Nuclear Waste Programs Office and to public libraries in the Panhandle.
January 31, 1984	Texas Nuclear Waste Programs Office submits a new grant proposal to DOE for support of consultation and cooperation activities beginning in March, 1984.
January 26-27, 1984	Officials from Louisiana, Mississippi, Texas, and Utah meet with DOE, ONWI, and NRC representatives in Columbus, Ohio, for the fourth bimonthly meeting, including discussions of socioeconomic issues and the preliminary draft of Volume I of the mission plan and environmental assessments schedules and plans.
January 23, 1984	ONWI contractor representative speaks to Institute of Electrical and Electronics Engineers, Southwestern Public Service, in Amarillo, Texas.
January 23, 1984	DOE sends response to December 12 letter from Oldham County commissioners, discussing socioeconomic impacts and providing information on the socioeconomic program specified by the Nuclear Waste Policy Act.
January 20, 1984	Lt. Governor of Texas appoints a State Senator from Canyon to represent Texas on a committee of the National Conference of State Legislatures monitoring the nation's disposal and storage of high-level radioactive waste.
January 20, 1984	DOE-SRPO provides Texas Nuclear Waste Programs Office with draft of state/DOE proposed interaction process during development of the draft environmental assessment.
January 16 and 27, 1984	DOE sends response to January 5 letter from attorney for STAND and POWER, including a list of materials sent to libraries in Deaf Smith and Swisher counties and names of people in Utah who oppose the program but support information offices.
January 17, 1984	DOE sends more detailed responses to June 24, July 1, and July 27, 1983, letters from the Texas High Plains Underground Water Conservation District No. 1.
January 16, 1984	DOE-SRPO offers to brief the House/Senate Joint Study Committee on Hazardous Waste Disposal and to provide comments at hearings held on nuclear waste.

January 11, 1984	ONWI sends a packet of information on nuclear waste isolation and a letter informing individuals in the salt states of the availability of a speaker's bureau to service organizations, community groups, and schools in Texas, Mississippi, and Utah. (Similar letters to Louisiana groups are to be sent when mailing lists are completed.)
January 11, 1984	Representatives of Louisiana, Mississippi, Texas, and Utah attend public meeting in Washington, DC, held by NRC to receive comments on DOE siting guidelines. Participation was limited to those who filed comments on the guidelines submitted by DOE to NRC for review and concurrence.
January 6, 1984	ONWI sends socioeconomic reports on community attitudes toward hazardous waste disposal facilities to Texas Department of Agriculture in response to its request.
January 5, 1984	Attorney for STAND and POWER sends letter to DOE expressing opposition to information offices and information exchanges in the Panhandle.
December 20, 1983	DOE-SRPO forwards to Texas Nuclear Waste Programs Office Secretary of Energy's response to a request from the House Committee on Interior and Insular Affairs for information on DOE waste form and packaging activities.
December 20, 1983	DOE-HQ sends preliminary draft of Volume I of mission plan required by NWPA to state officials in Louisiana, Mississippi, Texas, and Utah. Volume I draft includes discussion of program's policy, strategy, plans, and intended schedule. Comments are requested by January 31, 1983.
December 16, 1983	Senator from Texas sends letter to the Secretary of Energy expressing concerns about Deaf Smith County being considered as a repository site and requesting a detailed report on the status of site evaluations and siting decisions.
December 13, 1983	DOE-SRPO sends Texas Nuclear Waste Programs Office copies of Response Report from U.S. Department of Energy Hearings on Proposed Salt Site Nominations (ONWI-519).
December 12, 1983	Oldham County Commissioner sends letter to DOE expressing concerns about socioeconomic impact on Oldham County if a repository is located in Deaf Smith County.

December 12-15, 1983	DOE works with Louisiana, Mississippi, and Texas officials to provide financial assistance for representatives of salt states and members of the public to attend the Civilian Radioactive Waste Management Information Meeting in Washington, D.C.
December 8-9, 1983	Manager of Texas High Plains Underground Water Conservation District No. 1 sends letters to DOE expressing concerns about responses to earlier letters and public meetings.
December 6, 1983	DOE issues news release announcing the availability of Permian Basin Location Recommendation Report (DOE/CH/10140-2) in Panhandle libraries.
December 2, 1983	Director of Texas Nuclear Waste Programs Office sends to ONWI and DOE a copy of the notice of deadline for comments on the state's proposed regulations for construction of drilled or mined shafts.
December 2, 1983	DOE-NPO sends letter to the Texas High Plains Underground Water Conservation District No. 1 proposing a meeting in which hydrology issues would be discussed.
December 1, 1983	DOE sends response to letter published in Amarillo News-Globe from U.S. Representative from Texas, discussing issues raised and inviting the Representative to attend the Civilian Radioactive Waste Management meeting.
November 29, 1983	Copies of Response Report from U.S. Department of Energy Hearings on Proposed Salt Site Nominations (BMI/ONWI-519) were mailed to over 2,000 people in Louisiana, Mississippi, Texas, and Utah.
November 28, 1983	DOE sends letters to state officials and local leaders discussing plans for future information exchanges in the Texas Panhandle.
November 23, 1983	DOE sends response to October 30 letter from attorney representing STAND addressing concerns about credibility of DOE, future information exchanges, and information offices.
November 18, 1983	DOE-NPO sends responses to letters from members of the Upper Pease Soil and Water Conservation District and the Lubbock County Soil and Water Conservation District, providing answers to their questions and concerns about the Ogallala aquifer.

November 15-16, 1983	Officials from Louisiana, Mississippi, Texas, and Utah meet with DOE, ONWI, and NRC representatives in Columbus, Ohio, for the third bimonthly meeting, including discussions on the proposed EPA standards, environmental assessment issues, and technical information data base.
November 11, 1983	DOE issues news release announcing the availability of well completion reports in Panhandle libraries.
November 9, 1983	Planning meeting held in Amarillo with community leaders from Deaf Smith and Swisher counties and the Texas Nuclear Waste Programs Office to discuss subjects and format for future information exchanges in the Panhandle.
October 31, 1983	Director of the Texas Nuclear Waste Programs Office sends letter to DOE-NPO to provide information on the public comment period for the amended Texas water code regarding wells or mined shafts.
October 30, 1983	Attorney and president of STAND send letter to DOE-NPO to express views regarding future information exchanges and the establishment of information offices in the Texas Panhandle.
October 25, 1983	DOE-SRPO sends Texas Nuclear Waste Programs Office two copies of Area Geological Characterization Report for the Palo Duro and Dalhart Basins, Texas (DOE/CH/10140-1).
October 24, 1983	Representatives of Louisiana, Mississippi, and Texas meet representatives of DOE, ONWI, and Sandia's Transportation Technology Center in Columbus, Ohio, to discuss environmental issues, including transportation and water rights.
October 23, 1983	DOE-NPO issues news release announcing the availability of Area Geological Characterization Report for the Palo Duro and Dalhart Basin, Texas (DOE/CH/10140-1) at public libraries in the Panhandle.
October 11, 1983	DOE-SRPO responds to August 12, 1983, reiteration of the position of POWER on DOE's public information plans.
October 7, 1983	Texas Governor sends to DOE-HQ comments on September 23, 1983, version of the Proposed Final Siting Guidelines.

October 7-8, 1983	Two one-day nuclear waste information exchanges are held in Hereford and Tulia, Texas, to respond to questions and issues raised at the May, 1983, public hearings.
September 30, 1983	Governor of Texas sends letter to DOE-NPO providing information on Texas water code regarding water wells or mined shafts that was signed into law on May 18, 1983.
September 26, 1983	Texas High Plains Underground Water Conservation District No. 1 sends response to DOE letter of September 6, raising several additional questions about the hydrology of the Palo Duro Basin locations.
September 26, 1983	News release and public notices announcing the October 7-8 information exchanges in Hereford and Tulia sent to news media and people in Texas.
September 23, 1983	DOE sends copies of the proposed final "General Guidelines for Recommendation of Sites for Nuclear Waste Repositories," dated September 23, 1983, to all states being considered for a repository.
September 20-21, 1983	Officials from Louisiana, Mississippi, Texas, and Utah meet with DOE, ONWI, and NRC representatives in Columbus, Ohio, for the second bimonthly meeting, including discussions on the status of the program, an NRC update, and a seminar on large-diameter hole drilling.
September 15, 1983	DOE issues news release announcing availability of the final Area Geological Characterization Report for the Palo Duro and Dalhart Basin, Texas (DOE/CH/10140-1).
September 15, 1983	Governor of Texas sends letter to DOE-NPO concerning continuation of NWTS field investigations in the Palo Duro Basin.
September 13, 1983	NRC sends letter to governors of Louisiana, Mississippi, Nevada, and Texas requesting each to designate a key state contact for communications between NRC and the states.
September 9, 1983	Director of the Texas Nuclear Waste Programs Office sends letter to DOE-NPO with (1) petition for rule-making on NRC concurrence proceeding under Section 112(a) of the NWPA and (2) response to proposed amendments to 10 CFR 60.

September 6, 1983	Director of the DOE Nuclear Waste Policy Act Project Office sends letter to U.S. Senator from Texas, enclosing response to July 27 and July 1 letters.
September 1, 1983	Governor of Texas sends letter to DOE-NPO announcing that the Texas Energy and Natural Resources Advisory Council (TENRAC) had been abolished and that certain TENRAC programs had been transferred to other state agencies.
August 29, 1983	Governor of Texas sends letter to the Secretary of Energy expressing concerns about finalizing and implementing the siting guidelines.
August 26, 1983	Director of the Texas Nuclear Waste Programs Office sends letter to the DOE project director of the NWPA Project Office expressing concerns about the siting guidelines.
August 23, 1983	News releases and public notices issued announcing availability of final transcripts from the May, 1983, public hearings and the summary of issues and concerns expressed during the hearings (ONWI-505).
August 23, 1983	Representatives of Louisiana, Mississippi, and Texas meet with DOE and ONWI representatives to discuss environmental issues, principally salt management and disposal.
August 18, 1983	General session of representatives of Louisiana, Mississippi, Texas, and Utah is held in Dallas, Texas, to review the draft final siting guidelines prepared by a DOE task force.
August 15, 1983	DOE-NPO sends information to the director of the Texas Nuclear Waste Programs Office as requested at the July 19-20 meeting in Columbus, Ohio. The information includes a copy of "A Study of the Isolation System for Geologic Disposal of Radioactive Waste" by Dr. Thomas Pigford and a copy of the ONWI work breakdown structure dictionary.
August 12, 1983	Director of the Texas Nuclear Waste Programs Office sends letter to DOE-NPO confirming the need for expanding NWTS public outreach programs in the Texas Panhandle.
July 27, 1983	A U.S. Senator from Texas sends letter to the Secretary of Energy asking that DOE respond to the July 1, 1983, letter from the High Plains Underground Water Conservation District No. I board member.

July 26, 1983	DOE sends copies of completed transcripts of the prenomination public hearings including remarks and materials presented at the hearings and mailed-in comments received before May 31, 1983.
July 19-20, 1983	Officials from Louisiana, Mississippi, Texas, and Utah meet with DOE and ONWI representatives in Columbus, Ohio, to discuss the status of the program, public information and outreach activities, and a National Academy of Sciences seminar on radioactive waste management.
July 18, 1983	DOE representatives make presentations in Savannah, Georgia, at the Southern Legislative Conference's Annual Meeting sponsored by the Southern States Energy Board.
July 15, 1983	DOE-NPO sends guidelines for agreements, grants, and financial assistance for states to the director of the Texas Nuclear Waste Programs Office.
July 11, 1983	DOE-NPO sends letter to TENRAC to respond to TENRAC's May, 1983, comments on the Permian Basin Area Geologic Characterization Report (DOE/CH/10140-1).
July 1, 1983	A member of the board of directors of the High Plains Underground Water Conservation District No. 1 sends letter to DOE/HQ requesting responses to several concerns about siting a repository in the Panhandle.
June 27-28, 1983	DOE and ONWI representatives brief Texas Nuclear Waste Projects Office (TNWPO) on task force draft of siting guidelines.
June 24, 1983	Manager of the High Plains Underground Water Conservation District No. 1 sends letter to DOE/NPO requesting responses to several concerns about siting a repository in the Panhandle.
June 24, 1983	DOE sends copies of transcripts from the prenomination public hearings to libraries and public reading rooms in Louisiana, Mississippi, Texas, and Utah.
June 8, 1983	DOE sends Texas officials a copy of the transcript of the May 16, 17, and 18, 1983, prenomination public hearings held in Texas regarding the proposed nomination of a site for detailed site characterization.

May 27, 1983	DOE sends to Louisiana, Mississippi, Texas, and Utah officials copies of the Draft Revised General Guidelines for Recommendation of Sites for Nuclear Waste Repositories and Draft Responses to Public Guidelines for Recommendation of Sites for Nuclear Waste Repositories.
May 21, 1983	DOE and ONWI representatives participate in a nuclear waste information fair sponsored by People Opposed to Wasted Energy Repositories (POWER) in Hereford.
May 18, 1983	Texas legislature enacts Senate Bill 1018 which requires obtaining a permit from the Texas Water Commission before beginning construction of a drilled or mined shaft.
May 17, 1983	Texas State Senate Resolution 413 adopted to provide statutory guidelines on the development or operation of high-level nuclear waste repositories.
May 16, 1983	Nuclear Regulatory Commission determines safe disposal in a repository technically feasible.
May 16-18, 1983	Public hearings held in Texas on the proposed nomination of sites in salt deposits for detailed site characterization and on recommendations of issues to be addressed in the environmental assessments and site characterization plans.
May 11, 1983	DOE representatives meet with representatives from Louisiana, Mississippi, Texas, and Utah at the Plenary State Consultation session in Dallas, Texas, to discuss DOE's process of developing general guidelines for recommendation of sites for nuclear waste repositories.
May 5, 1983	DOE sends a letter to the mayor of Canyon, Texas, providing background information on DOE's study of the Ogallala aquifer.
May 4, 1983	TENRAC sends comments on the Permian Basin Area Geologic Characterization Report to DOE/NPO.
May 2, 1983	DOE sends a letter to Texas Department of Agriculture in response to questions on water usage requirements to construct and operate a high-level waste repository.

May 2, 1983	DOE encloses copies of reports, memoranda, and other documents to Serious Texans Against Nuclear Dumping (STAND) in response to the organization's Freedom of Information Act request.
May, 1983	National Academy of Sciences/National Research Council panel reports technology for repository ready for confirmation in test facility.
April 30, 1983	ONWI provides information to the Geology Department at West Texas State University in Canyon.
April 29, 1983	DOE representatives participate in a public meeting sponsored by the Canyon (Texas) Chamber of Commerce.
April 29, 1983	Public hearing notices and information about the proposed nomination of sites are mailed to 399 citizens and state officials in Texas. A news release is mailed to Texas media representatives.
April 22, 1983	The governor of Texas sends a letter to the Secretary of Energy stating that Texas still objects to the scheduling of scoping hearings prior to the issuing of final siting guidelines.
April 14, 1983	Notice of public hearings to be held in April and May in the vicinity of sites proposed for nomination published in the Federal Register.
April 7-13, 1983	ONWI staff members make presentations on the salt project activities to members of the Commission of European Communities during a technology interchange meeting in Columbus, Ohio.
April 5, 1983	Secretary of Energy responds to March 10, 1983, and April 4, 1983, letters from Texas governor regarding plans for nominating and recommending sites for detailed site characterization.
March 29, and April 5, 1983	DOE-NPO and ONWI representatives provide information about program status, socioeconomics, transportation, protection of the Ogallala aquifer, hydrology and repository safety issues at the request of People Opposed to Wasted Energy Repositories (POWER) for public hearings in Hereford.
March 23, 1983	The Canyon City Commission sends a letter to DOE saying it opposes location of a high-level waste repository in Deaf Smith County, Texas.

March 21, 1983	The directors of the Palo Duro Soil and Water Conservation District tell the Secretary of Energy they are opposed to the location of a repository site in or adjacent to Randall County.
March 18, 1983	DOE-NPO representatives brief representatives of the Texas governor's staff and congressional aides at the TENRAC offices in Austin. Information is presented about program status, draft siting guidelines, and Nuclear Waste Policy Act of 1982.
March 2, 4, 7, 10, 14, and 21, 1983	Public hearings on the proposed general guidelines for the recommendation of sites for nuclear waste repositories held in Seattle, Washington; Chicago, Illinois; New Orleans, Louisiana; Washington, D.C.; and Salt Lake City, Utah.
February 24, 1983	Notice of public hearings on proposed siting guidelines sent to approximately 3,000 people including Texas officials and citizens.
February 14, 1983	Notice of public hearings on proposed general siting guidelines published in the Federal Register.
February 7, 1983	Proposed general guidelines for recommendation of sites for nuclear waste repositories, required by the Nuclear Waste Policy Act of 1982, are published in the Federal Register.
February 2, 1983	Letters of notification of potentially acceptable sites are sent to officials in affected states, including Texas, in accordance with the Nuclear Waste Policy Act.
January 11, 1983	The announcement of the Environmental Protection Agency proposed rule on high-level waste disposal is sent to Texas officials.
January 7, 1983	The President signs the Nuclear Waste Policy Act of 1982.
January 5, 1983	DOE provides copies of seismic data to public libraries and announces availability of the data via news release and notices to technical and public mailing lists.
December 30, 1982	News release issued by DOE announcing the beginning of the Holtzclaw-Wood No. 1 and the status of drilling at J. Friemel No. 1.

December 29, 1982	DOE-NPO sends copies of draft Permian Basin Location Recommendation Report (DOE/CH/10140-2) to TENRAC for review.
December 14-15, 1982	Representatives of the state of Texas and two members of Serious Texans Against Nuclear Disposal (STAND) of Tulia attend the NWTS Annual Meeting in Las Vegas.
December 8, 1982	DOE-NPO sends copies of the draft Area Geologic Characterization Report (DOE/NE/10140-1) to TENRAC for review.
December 2, 1982	Representatives of DOE and ONWI brief the High-Level Waste Subcommittee of TENRAC and the public on the conceptual design of a repository in a bedded salt formation. Approximately 150 people attend the meeting, held in Canyon, Texas.
November 16 and 19, 1982	Representatives of Louisiana, Mississippi, Texas, and Utah discuss the status of salt studies with DOE officials during a Host States Working Group Meeting in Washington, D.C. Information was presented about factors influencing the selection of the prime salt site for detailed site characterization.
November 12, 1982	DOE receives grant proposal from TENRAC, requesting review, coordination, and consultation activities funding.
November 9-10, 1982	State geologists from Louisiana, Mississippi, Utah, Texas, and other states meet in Columbus, Ohio, to review concerns expressed by Mississippi state officials about Site Characterization Plan for Gulf Coast Salt Domes (ONWI-293).
November 9, 1982	Copies of the Location Recommendation Report for the Palo Duro and Dalhart Basins sent to the Texas Bureau of Economic Geology for review of geotechnical information.
November 3 and October 26, 1982	DOE-NPO sends information on status of siting studies in other states to TENRAC as requested (see August 5, 1982, letter).
October 25, 1982	DOE provides drill site flyers describing activities at the J. Friemel No. 1 borehole for posting at the site.
October 25, 1982	News release issued by DOE announcing beginning of J. Friemel No. 1 borehole and completion of Harman No. 1 borehole.

October 21, 1982	DOE representatives meet with Texas state officials in Austin, Texas, to discuss permits that would be required if the salt exploratory shaft were to be constructed in Texas.
September 30, 1982	DOE-NPO sends copies of Area Environmental Characterization Report of the Dalhart and Palo Duro Basins in the Texas Panhandle (ONWI-102) to executive director of TENRAC for state review and comment.
September 16-17, 1982	TENRAC representatives meet with DOE-NPO and ONWI personnel in Columbus, Ohio, to discuss the status of program studies in other states and the upcoming briefing on siting and repository design.
September 2, 1982	DOE-NPO sends copy of draft Site Characterization Report (ONWI-368), Chapter II, to executive director of TENRAC for state review and comment.
September 1, 1982	DOE-NPO sends letter to executive director of TENRAC informing state of changes in scheduled mailing dates for the Permian program documents (ONWI-102, Area Environmental Characterization Report; ONWI-292, Area Geologic Characterization Report; ONWI-368, Chapter II, Site Characterization Report; and the final ONWI-288, Location Recommendation Report).
August 30, 1982	News release issued by DOE announcing the completion of Zeeck No. 1 borehole and the beginning of Harman No. 1 borehole.
August 5, 1982	Letter from director of TENRAC's Energy Policy Division to DOE-NPO requesting information to be used by TENRAC in comparing the status of siting studies in other states.
August, 1982	DOE-HQ briefs congressmen and senators from Texas about NWTS program activities in the Panhandle.
July 30, 1982	DOE and ONWI representatives brief officials of Castro County and the city of Dimmitt on the NWTS program and studies in Texas.
July 29, 1982	Representatives of DOE and ONWI brief officials of Randall County and the city of Canyon on the NWTS program and studies in Texas. DOE and ONWI representatives make presentations and answer questions following slide shows about the May 31-June 4, 1982 tour of WIPP and NTS, shown to local officials at Tulia and to the general public at Hereford.

45-432 O—85——5

July 28, 1982	Letter from DOE-NPO to the executive director of TENRAC discussing possible consultation and cooperation funding.
July 22, 1982	Representatives of TENRAC, DOE, and ONWI brief the High-Level Waste Subcommittee of TENRAC's Advisory Committee on Nuclear Energy on the status of federal legislation, and on the status of the NWTS program studies in Texas, Louisiana, Mississippi, Nevada, Utah, and Washington state.
July 21, 1982	Representatives of DOE and ONWI brief Texas state legislative aides in Austin on the NWTS program and studies in Texas.
July 8, 1982	DOE-NPO sends letter to executive director of TENRAC discussing changes in the program schedule and deferral of the principal borehole.
May 31-June 4, 1982	DOE-NPO sponsors a tour of the Waste Isolation Pilot Plant (WIPP) and the Nevada Test Site (NTS) for a group of Texas officials and citizens.
May 4-5, 1982	DOE-NPO and ONWI representatives discuss possible information offices and other public information plans with officials of Deaf Smith and Swisher counties.
April 22, 1982	DOE-NPO sends copies of Geologic Evaluation of Gulf Coast Salt Domes: Overall Assessment of the Gulf Interior Region (ONWI-106) to the executive director of TENRAC.
April 20, 1982	ONWI representatives brief members of TENRAC's subcommittee on high-level waste in Austin on socioeconomic plans and studies.
April 2, 1982	The Secretary of the Department of Agriculture informs the Secretary of the Department of Energy that the Deaf Smith and Swisher county locations contain prime farmland.
March 29, 1982	Copies of comments from USGS on ONWI-109 sent to state officials in Louisiana, Mississippi, and Texas.

March 25, 1982	Final versions of the Gulf Coast Area Geologic Characterization Reports (ONWI-117 through 120), Area Environmental Reports (ONWI-192 through 194), and Location Recommendation Report (ONWI-109), sent to Texas, Louisiana, and Mississippi officials, along with the draft Gulf Site Characterization Plan (ONWI-293). The letter to TENRAC clarifies that, while ONWI-109 states that Oakwood dome met minimum criteria, technical uncertainties about the number of exploration holes justify deferring further study.
March 11, 1982	Letter sent from the secretary of DOE to the governor of Texas, detailing schedules and planned activities for studies of the locations identified in the Permian Basin.
March, 1982	DOE sends responses to people whose questions were not answered at the Texas public meetings in January and to people who asked for a written response after the meetings.
February 24, 1982	DOE sends news release to Texas media announcing the locations recommended for further study in Deaf Smith and Swisher counties.
February 8, 1982	DOE-NPO sends copy of draft Permian Basin Location Recommendation Report (ONWI-288) to executive director of TENRAC for state review and comment.
February 4, 1982	A representative of the DOE Columbus Program Office presents information about the NWTS program at a hearing of the Texas Senate Committee on Natural Resources.
February, 1982	Drilling of boreholes in Deaf Smith and Swisher counties begins.
January 18, 19, and 21, 1982	Public meetings held in Tulia, Hereford, and Austin by DOE to present information about completion of area studies and answer questions from residents.
January 8, 1982	Responses and public information materials sent by DOE to approximately 300 people in western Texas who wrote letters to DOE in November and December, 1981, about studies in the Permian Basin.
December 17-18, 1981	Officials in Swisher and Deaf Smith counties briefed by DOE on Permian Basin area studies.
November 9, 1981	TENRAC and other Texas officials briefed in Austin on the status of area studies in the Permian Basin.

October 28, 1981	Copies of the draft Framework for Community Planning Associated with Nuclear Waste Repository Siting (ONWI-254) sent to state officials in Texas (TENRAC), Utah, Louisiana, and Mississippi.
September 14, 1981	Meeting of TENRAC attended by a DOE official as requested by the governor of Texas.
August 27 and September 15, 1981	Officials from Texas and Louisiana meet in Columbus, Ohio, with ONWI and DOE personnel to finalize the "Site Characterization Plan."
June 23-25, 1981	Separate one-day workshops conducted by ONWI personnel with representatives of Texas, Louisiana, and Mississippi to review the Site Characterization Plan Working Papers.
June 10, 1981	An educational field trip to the Morton Salt Mine at Grand Saline, Texas, conducted by DOE-Dallas for Texas and Mississippi officials.
June, 1981	Area phase activities resume in the Permian Basin with drilling of boreholes in Oldham and Donley counties.
May 18-20, 1981	DOE sponsors a tour of the Permian Basin for NRC officials.
April 27, 1981	Texas officials attend the site characterization planning meeting in Columbus, along with representatives from Louisiana and Mississippi.
March 30, 1981	Copies of the draft Evaluation of Area Studies of the U.S. Gulf Coast Salt Dome Basins (ONWI-109) mailed to state officials in Mississippi, Louisiana, and Texas; information about the report's recommendations provided to news media representatives; and briefing held for congressional delegations of the three states.
February 18, 1981	Officials of Mississippi, Louisiana, and Texas attend a site characterization planning meeting with NPO and ONWI representatives in Columbus, Ohio.
October 17, 1980	News release issued announcing Stone & Webster Engineering Corp. will be conducting geologic studies in the Permian Basin and that test holes will be drilled in Oldham and Donley counties.

September 9, 1980	Briefing held for six NRC representatives by DOE and contractor representatives about salt dome studies, followed by tours of the domes in Mississippi, Louisiana, and Texas. Meetings are also held with NRC officials and participating groups, agencies, and state geologists.
April 25, 1980	Letter sent from the governor of Texas to the secretary of DOE designating TENRAC as the lead agency to coordinate and communicate with DOE on high-level nuclear waste disposal issues in Texas.
March 27, 1980	Memorandum of understanding signed by representatives of DOE, Battelle, TBEG, and TENRAC, outlining procedures for consultation with TBEG and TENRAC on the geologic exploration process in Texas.
December 3, 1979	A group of officials from Texas, DOE, and ONWI answers questions about nuclear waste repository site plans from a panel of members of Action Committee for Retention of Environmental Safety at Anderson College in Palestine, Texas. Questions are also submitted by 250 people attending.
November 20, 1979	News release issued by DOE in Texas to announce that further extensive deep exploratory drilling and testing at Oakwood dome are being deferred, as a result of findings that 36 oil and gas wells had previously been drilled into the dome's overhang.
October 22, 1979	Meeting held at the Freestone County Courthouse in Fairfield to answer questions about procedures for site qualification from residents of Freestone, Leon, and Anderson counties. Participants include representatives of DOE-HQ, TBEG, and TENRAC.
October 3, 1979	News release issued by DOE announcing the elimination of Palestine dome as a candidate site because of brining conditions that might compromise the integrity of a future repository. The release is mailed to national and Texas media.
October 2-3, 1979	Public hearings held in Dallas by DOE for comment on the Generic Environmental Impact Statement.
September 1, 1979	The Texas Energy and Natural Resources Advisory Council (TENRAC) established by statute, consolidating the former Texas Energy Advisory Council (TEAC), Texas Natural Resources Council, and the governor's Office of Energy Resources.

July 16, 1979	Area environmental studies begin in eastern Texas, including the counties containing or adjacent to the Keechi, Oakwood, and Palestine salt domes.
July 11, 1979	Letter sent from DOE to Texas officials notifying them of the commencement of environmental studies of detailed evaluations in a 1,000-square-mile area in six counties in or adjacent to Keechi, Oakwood, and Palestine salt domes.
July 9, 1979	Audiovisual presentation about the NWTS program given at a meeting of the Advisory Committee on Nuclear Energy of TEAC in Austin. A representative of DOE/RL-C reviews the NWTS program and activities in Texas.
June 21, 1979	News release issued by DOE, announcing the issuance for public comment of the draft "Generic Environmental Impact Statement," mailed to news media in Texas, Mississippi, Utah, and Louisiana.
Early June, 1979	Activities resume at Oakwood dome with shallow drilling of 24 boreholes.
May, 1979	Final draft issued of ONWI-18, Summary Characterization of the Gulf Interior Region and Study Area Recommendation.
April 26, 1979	Letter sent from the DOE Richland Operations, Columbus Program Office (DOE/RL-C) authorizing ONWI to proceed with environmental exploration activities in the Gulf Coast area (which includes northeast Texas). The letter advises that these activities can parallel the review by the states of ONWI-18, and that ONWI is to inform state leaders, as required by law, and brief respective state organizations that activities are being resumed.
October, 1978	Drilling of core holes begins in Swisher County.
August 23, 1978	Hearing held on request for permanent injunction. The temporary injunction is lifted and the permanent injunction is denied, but the plaintiff is given the option of asking for another hearing at a later date if he wishes to amend the petition to be more specific. Drilling resumes the following morning, August 24.

August 15, 1978	Temporary injunction granted by the judge of the 181st District Court, Randall County, Canyon, Texas, to prevent beginning of drilling in Randall County, pending action on request for permanent injunction. Permanent injunction requested by the Randall County commissioners against drilling of any holes that could lead to the disposal of nuclear waste in the county, in response to a petition from local residents. The request for injunction charges that such drilling constituted an unjustifiable threat to the ground-water supply.
July 28, 1978	News release issued by DOE announcing plans to initiate core drilling activities in Randall County in the Palo Duro Basin between August 1 and 10.
July 12, 1978	Public meeting held at Anderson College Center in Palestine, Texas, to provide information about proposed activities at Palestine dome and Keechi dome. Meeting conducted by a former president of Palestine Chamber of Commerce. Attending are representatives from DOE Headquarters (DOE-HQ), TBEG, ONWI, TEAC, and a state senator's office.
July, 1978	Work begins at Texas locations on installation of field observation stations to collect climatological data, measure surface runoff, and measure erosion.
May 12, 1978	Letters sent from TBEG to state senators and representatives of counties in which studies are being conducted, reporting progress on activities in Texas. Approximately at this same time, a TBEG representative briefs administrative aides of the Texas governor, lieutenant governor, attorney general, speaker of the house, and various natural resources agencies.
September 23, 1977	Letter sent from OWI to the governor's Office of Energy Resources indicating preliminary contracts signed with Bechtel National Corp. (Gulf Coast salt domes) and NUS Corp. (Permian) for environmental studies in Texas.
September 19, 1977	Letter sent from NUS Corp. to the governor's Office of Energy Resources, providing background information on activities planned in Texas and summarizing activities to date.
September 12, 1977	Letter sent from OWI to TEAC informing them that Law Engineering Testing Company (LETCo) has been given a preliminary contract for geologic studies in the Gulf Coast.

August 22, 1977	Letter sent from OWI to the executive director of TEAC, indicating that TBEG is expected to continue under contract for the coming fiscal year to conduct geologic studies in the Dalhart and Palo Duro basins.
July 14, 1977	Meeting held between representatives of several Texas state agencies, OWI staff, and NUS representatives to explain the OWI program of environmental assessment and initiate process of obtaining sources of environmental information.
June 29, 1977	Public information meeting regarding the NWTS program held in Amarillo and called by the state representative of the 65th district after an announcement by ERDA of plans to contract with the Texas Bureau of Economic Geology (TBEG) for studies in the Panhandle.
June 17, 1977	Letter sent from OWI to the executive director of the Texas Energy Advisory Council (TEAC), advising him of a contract between OWI and NUS Corp. for development of plans for a series of environmental studies.
May 27, 1977	Conference/seminar held in Austin on "Energy Production and Environmental Regulation," sponsored by the Texas Environmental Coalition, including a discussion of nuclear waste management. Representatives from OWI and the Environmental Policy Center in Washington, D.C., participate.
April 4, 1977	News release sent from OWI to 700 media outlets in Texas containing information about the NWTS program and planned activities in Texas.
March 30, 1977	Briefing held at the State Capitol Building in Austin for members of the Governor's Energy Advisory Council, arranged by the executive director of the Council. Representatives of OWI participate. 50 people attend.
January 21, 1977	Letter sent from OWI to the Governor's Energy Advisory Council confirming a phone conversation regarding the NWTS program and including information about it and plans for Texas.
December 2, 1976	Newsletter from ERDA lists Texas as one of the 13 states where field work, including core drilling, will be conducted along with literature studies.

November 11, 1976	Letter sent from the U.S. Energy Research and Development Administration (ERDA) to governors and congressional delegations of the 36 states, including Texas, where studies are to be conducted, conveying printed material about the NWTS program and specific plans in each state.
November 5, 1976	Letter sent from DOE's Office of Waste Isolation (OWI) to the Governor's Energy Advisory Council conveying written presentations about the NWTS program.
July, 1976	Study completed on the possibilities of salt areas in the Texas Panhandle, especially the Dalhart and Palo Duro Basins. Preliminary results show areas promising enough to justify further investigations.
January, 1976	Netherland, Sewell, and Associates selected to evaluate the eastern Texas salt dome basin and to identify two to four domes most promising for further study. They are advised to consult the Texas Bureau of Geology or the Texas Railroad Commission for possibly useful data.
Early 1972	A reconnaissance survey of all major salt deposits in the United States determines that salt formations warrant further study as possible sites for nuclear waste repositories, including the salt domes in the Gulf Interior Region of northeast Texas and portions of the Permian Basin in the Panhandle area of Texas. Early studies are conducted by the University of Texas in the Gulf Coast salt domes. The Institute of Environmental Studies at Louisiana State University also begins investigations of the region's tectonic and hydrologic stability.

SALT HANDLING, MANAGEMENT, DISPOSAL, AND IMPACTS AT THE DEAF SMITH AND SWISHER COUNTY REPOSITORY SITES IN WEST TEXAS

February 28, 1985

This discussion of salt handling, management, disposal, and related environmental impacts during the site characterization and repository phases of the Salt Repository Project is derived from existing information, including that contained in the draft Environmental Assessments (EAs) for the Deaf Smith and Swisher County sites (U.S. DOE, 1984), a Preliminary Salt Control Plan (Parsons-Redpath, 1984), and other sources as noted.

Quantity of Salt Stored

A relatively small amount of salt will be stockpiled during the site characterization phase, compared to the repository phase. The total amount of salt stored during characterization would be approximately 127,000 tons at the Deaf Smith site, and 136,000 tons at the Swisher site. Most of this salt would be produced from excavation of test drifts in the salt horizon; smaller amounts would be obtained during exploratory shaft excavation. The maximum land area covered by salt storage stockpiles at either site during the characterization phase would be less than 5 acres. The storage piles would not exceed 50 feet in height. During the repository phase the total amount of salt that would need to be stored would be approximately 3.7 million tons at either site. An area of up to about 56 acres could be covered by salt storage piles during this phase; the piles would stand approximately 39 feet above grade.

Mining and Transfer of Salt

Excavation of most of the salt would be accomplished using continuous mining equipment, typically producing salt fragments ranging in size from dust-like particles up to six-inch diameter size. Excessive salt dust would be removed from the mine atmosphere through use of filters placed near the excavation machinery and at underground transfer points.

During site characterization, mined salt will be removed from the working face to a hoist, using load-dump-haul vehicles. Such vehicles will also transport salt from the head of the hoist to the salt stockpile. Bulldozers will be used to shape the growing stockpile. During the repository phase, conveyors will be used to transport salt in the mine drifts, as well as above ground to the stockpile. If required, water sprays will be used to control salt dust generation at conveyor tranfer points; most conveyors will be enclosed to restrict the atmospheric transfer of small salt particles.

Soil and Groundwater Protection

Salt storage stockpiles will be isolated from surface facility soils and groundwater through installation of an impervious liner. Either natural (i.e., clay) or synthetic (e.g., polyvinyl chloride, polyethylene, polypropylene, neoprene) materials will be used. State-of-art construction practice will be used during installation to ensure liner integrity.

In order to monitor the effectiveness of the liner in retaining any brine that may be present, a network of perforated plastic pipes imbedded in a gravel pack will be emplaced beneath the liner. This will provide access to groundwater samples immediately beneath the salt storage area. Monitoring wells downgradient of salt storage areas can also be sampled to verify groundwater salinity levels.

Runoff and Drainage Control

To protect site soils and groundwater from salinity during precipitation events, it will be necessary to isolate uncontaminated site runoff from saline salt pile runoff. Uncontaminated runoff will be diverted from salt storage areas by channeling it into unlined drainage ditches discharging to natural drainage pathways. Salt-contaminated runoff from salt storage areas will be collected by lined ditches and diverted to a primary lined retention/evaporation pond. Ponds at either site will be sized for the necessary volume based on historic cumulative maximum monthly rainfall and minimum evaporation data. A secondary retention pond also will be constructed to accommodate the saline overflow from at least a 100-year, 24-hour rainfall.

Contingency Measures

It is anticipated that the design features discussed above will be sufficient to effectively isolate mined salt from the environment. However, the following contingency measures can be applied:

- When mined salt is exposed to weather, a hard surface crust forms in a few days, which resists dispersion by wind, and tends to shed rainwater (Ver Planck 1958, WIPP 1984). Crust formation can be accelerated through application of water sprays.

- During high wind conditions, work on the salt pile can be temporarily interrupted to reduce the potential for particle suspension by wind at poorly-crusted interfaces.

- Wind and water erosion of salt can be reduced by covering stockpiles with plastic membranes or tarpaulins.

- Ditch drains can be constructed downgradient from saline storage/evaporation ponds, to intercept salt-contaminated groundwater, if such is detected. Water collected from such ditches would be pumped back to the primary ponds.

- If failure of a pond liner occurs, the leaking pond can be drained for the purpose of repairing or replacing the lining.

- Small quantities of solid salt accidentally deposited on unprotected soils can be removed by mechanical methods.

- Removal of salt from the site for safe disposal can be accelerated as a mitigation strategy. A discussion of salt disposal is presented below.

Disposal of Excess Salt

Salt disposal for the site characterization phase will be required only if a site is not selected for repository construction. In this case, about 65% of the salt stockpiled would be needed for shaft and drift backfill; the remaining 35% would be excess salt to be disposed of, amounting to less than 50,000 tons at either site. If the site were selected for repository construction, the salt would temporarily remain at the site, with disposal being deferred until the repository phase salt disposal period. For the repository phase, a working stockpile of salt would have to be maintained for use as backfill. The excess salt, approximately 11.3 million tons at either site, would need to be disposed of at a maximum rate of 1.7 million tons per year (construction) and a minimum rate of 250,000 tons per year (operation)..

A number of disposal options have been identified and evaluated in previous reports referenced in the draft EAs. An in-depth analysis will be performed for each site as part of the final design of the facilities. This analysis would identify the most cost-effective disposal method that has the minimal environmental impact. However, the general feasibility aspects of several salt disposal options can presently be evaluated, as summarized below:

On-site Storage. This option assumes that the salt piles can be left in place at either site. This is feasible and economically attractive. However, the long-term integrity of the salt storage is an issue; therefore, this option is considered generally undesirable.

Off-site Storage (Landfill). This option is suitable only for the site characterization phase, because of the smaller volumes involved. An offsite landfill capable of handling such volumes has been identified at Clovis, New Mexico, approximately 100 miles away (Parsons- Brinckerhoff/ PB-KBB, 1984).

Off-site Storage (Salt Flats). This option involves transporting the salt to dried saline beds at Salt Flat, Texas, about 470 miles away. The salt would be spread in layers where surface salt deposits exist at present. This is a feasible option for excess salt from both site characterization and repository construction or operation, but would require state and local permission.

Deep Well Injection. This process, most feasible for disposal of excess salt from site characterization, involves the conversion of the salt to brine, and injection of the brine into deep aquifers with similar or higher saline concentrations. Substantial amounts of water would be required, with consequent impacts on local water supplies, detracting from the desirability of this option. Furthermore, the injection wells would have to be located outside the hydrological basin of the site (Langill, 1983), thus involving additional costs for transportation. A potential location for this disposal option has not yet been defined.

Disposal In Exhausted Salt Mines. Exhausted salt mines with sufficient capacity for disposal of the amounts of excess salt generated during the repository phase have been identified at Carlsbad, New Mexico, about 200 miles from the sites (Stearns-Roger, 1983). Backfilling of these salt mines may present difficulties due to unstable ground, possible cave-ins,

and preclusion of further mining activities (such as pillar recovery) after backfilling.

Subsidized Sale or Transfer. This option appears to be feasible only for the amounts of excess salt expected from the site characterization phase. The volumes involved are typical of salt volumes stored by distributors of de-icing salt, and correspond roughly to the amount of salt used by a medium-size northern city for road maintenance during a winter season. The closest salt distribution market is at Hutchinson, Kansas, some 300 miles distant. Because of the relatively small amount of salt that would be involved, it is believed that little disruption of the Hutchinson market would result from commercial sale of this salt. The salt could be offered for bids by GSA to present salt suppliers, with the possibility of DOE bearing the cost of transportation of the salt to the Hutchinson area.

Because of the relatively large amount of excess salt that will be mined during the repository phase, it is not believed that the salt produced could be introduced into any market without serious disruptions: The maximum production rate of 1.7 million tons per year, which would occur at either site during peak construction, is a significant fraction of the 13 million ton U.S. market (1980) for de-icing salt (NUS 1983). It is possible, however, that the market could absorb the minimum annual rate of excess salt production of 250,000 tons, which would occur during repository operation.

Offshore disposal. The DOE Strategic Petroleum Reserve (SPR) Project (DOE, 1978) is currently disposing of approximately 3.3 million tons of salt per year in the Gulf of Mexico at Bryan Mound, Texas, with negligible environmental impacts on offshore marine biota (DOE, 1983, 1984). Similar disposal of excess salt from site characterization or repository activities from either Texas site would involve transport of the salt to the Gulf of Mexico location, conversion to brine using seawater, and pumping the brine offshore, using the DOE-SPR diffuser system. The distance of the sites to the Bryan Mound location is approximately 600 miles. It is not known, however, if the DOE-SPR facilities would still be operational at the time of disposal, and if permissions could be obtained to dispose of excess repository project salt at these locations.

It is also possible that a salt dumping permit for offshore disposal in deep waters of the Gulf of Mexico could be obtained. This would simplify the disposal process because solid salt could be barged to the dumping location, bypassing the need for brining. If this method of disposal were implemented, the salt would be reclaimed from the stockpile, crushed, and shipped to barging locations in enclosed railroad cars. Similarly, it is possible that a disposal method analogous to dumping could be effected in the Great Salt Lake in Utah, about 650 miles from the Texas sites. As many as five million tons of excess salt per year is presently being disposed of as a piped slurry in the south end of the Great Salt Lake, by the Great Salt Lake Minerals and Chemical Company, near Ogden, Utah. No impacts on the predominant species present, the brine shrimp and the brine fly, have been observed; no fish inhabit the lake. The Great Salt Lake Minerals and Chemical Company, contacted informally, has not objected to use of their salt disposal facility for either site characterization or

repository salt disposal. If this method of disposal were implemented, the salt would be shipped as a solid to the company's slurry ponds. The company would be paid a fee, as yet undefined, for processing and disposal.

Preliminary Cost Estimates for Salt Disposal Options

A summary table is provided at the end of this report containing preliminary cost estimates for disposal of excess salt for the options discussed above (see Table 1). A more detailed treatment of the subject may be found in Preliminary Salt Control Plan (Parsons-Redpath, 1984), including data base description, cost elements, assumptions, and method.

While several methods of salt disposal appear feasible, it is not possible at the present time to identify the preferred disposal option for the two Texas sites: an in-depth analysis will be accomplished on a site-specific basis as part of the final design of each facility, for both the site characterization and repository phases. This analysis will identify the most cost-effective disposal method that has the minimal environmental impact.

Environmental Impact

The potential for salt impact is linked to the potential for mined or stored salt to contaminate environmental air or water, with subsequent dispersion to sensitive receptor species including man. As discussed previously, salt management safeguards will be employed at every step of project development to isolate salt from air, surface water, groundwater, and soils. Contingency measures are available to reduce the potential for contamination, if monitoring demonstrates a need. Thus, the amount and extent of dispersal of project salt is expected to be small. The anticipated impact of project salt on the environment and productive capacity in the vicinity of the Texas sites is summarized below.

Nearly 100% of the land in the vicinity of the Deaf Smith County site is devoted to crop and meat production; much of the soil is classified as "Prime." About 75% of land in the vicinity of the Swisher County site is devoted to crop and meat production, with about 75% of the soil similarly classified. Crops typically grown in the vicinity of the sites include alfalfa, barley, corn, cotton, hay, oats, rye, sorghum, soybeans, sugarbeets, sunflowers, wheat, field beans, and vegetables. Water for irrigated crops is drawn from the Ogallala aquifer which underlies the area. Any natural habitat remaining in these two locations is typical of the steppe climatic zone of the Southern High Plains.

Preliminary, conservative air dispersion modeling (U.S. DOE, 1984; Sec. 4.2.1) indicates that mining and stockpiling of salt during site characterization will result in salt emissions to the atmosphere of about 4 metric tons (5 tons) per year, with a peak emission of 15 metric tons (19 tons) per year. This may be put in perspective by noting that the capacity of a large dump truck is approximately 15 tons. Similar modeling indicates that salt emissions during repository construction may reach 32 metric tons (35 tons) per year. As indicated in Section 5.2.5 of the draft EAs, most salt deposition during the repository phase will occur in the immediate vicinity of salt storage piles, rapidly decreasing with distance. For example, an estimated deposition rate of about 188 pounds/acre/year at 100 meters from the salt pile, is expected to decrease to 50 pounds at 200 meters and only

13 pounds at 400 meters. Thus, the majority of salt deposited during repository development is expected to occur within the boundaries of the facilities. The modeled estimates are compatible with observations of impact at existing salt and potash mining facilities (see Parsons-Redpath, 1984), and at U.S. DOE defense and experimental facilities where salt is or has been mined, and is presently being stored in stockpiles (Intera, 1978; WIPP, 1984) - specifically, any impacts of environmental significance observed at these facilities have been observed in the immediate vicinity of salt operations, decreasing rapidly with distance. The impacts observed include damage to roots and leaves of vegetation; a common symptom is leaf tip burn, the disintegration of leaves at their margins. Protracted exposure to high concentrations of salt also results in the death of vegetation within 50-100 feet of storage piles, with subsequent replacement by more tolerant species in some instances. High concentrations of salt in soils immediately adjacent to salt storage piles also inhibits plant sprouting.

The range of salt tolerance of several crop plants grown in the vicinity of the West Texas sites is known as follows: barley, cotton, and sugar beets - high tolerance; alfalfa, corn, oats, rye, soybeans, sunflowers, and wheat - medium tolerance; and field beans - low tolerance. It is difficult to assess if any such crops planted near the site would be affected by windblown salt; however, due to the small anticipated amount and extent of salt dispersal by wind, plans to locate the salt storage piles within repository site boundaries, expected rapid decrease in salt deposition with distance, and observational experience at existing salt storage piles, little, if any, decrease in the productive or grazing capacity of land beyond site boundaries is expected from wind dispersion of salt. Although there is presently little available information on salt tolerance of steppe vegetation in the vicinity of the two sites, impacts on natural habitat beyond the site boundaries is also expected to be negligible for reasons similar to those above.

No significant impacts to vegetation beyond site boundaries are expected due to saline runoff during precipitation events. Observations at existing salt storage facilities mentioned previously indicate that the engineering safeguards that will be incorporated in repository facility design will be effective in isolating saline runoff from the surrounding environment.

A number of playa lakes, with attending wetlands, exist in the vicinity of both Texas sites, including at least one lake within the boundaries of each site. No currently listed threatened or endangered species are known to be associated with these features in the vicinity of the two sites. Some of the larger lakes are occasionally stocked during wet periods with stress-tolerant gamefish such as channel catfish, largemouth bass, and sunfish. It is likely that some salt will be deposited in playa lakes within site boundaries, near salt handling activities, resulting in some degradation of water quality. While it is also possible that small quantities of windblown salt could be deposited in more distant playa lakes beyond site boundaries, it is concluded that the aquatic resources of the lakes would not be significantly affected, based on the small quantity of salt that would be involved.

No significant environmental impacts are anticipated due to salt contamination of other surface waters or of groundwater, including the Ogallala aquifer: The salt management design discussed previously is expected to effectively

isolate mined and stored salt from water supplies. Additional measures can be applied to further limit the potential for contamination of such supplies. The small quantities of salt that may reach surface or ground water will be at levels far below the threshold for significant environmental impact.

REFERENCES

Intera, 1978 — Radiological Waste Storage Analysis, prepared for Sandia Laboratories. Intera Environmental Consultants, Inc., 11511 Katy Freeway, Houston, TX 77079, Fall, 1978.

Langill, 1983 — Preliminary Investigation of Deep Well Disposal of Excess Repository Salt. Report to Battelle/ONWI, January 13, 1983.

NUS, 1983 — Disposal Alternatives and Recommendations for Repository. NUS Corporation. September, 1983.

Parsons-Brinkerhoff/ PB-KBB, 1984 — Exploratory Shaft Facility Report on Wastes, Dispoal Options, and Issues. E5-140-01, June, 1984.

Parsons-Redpath, 1984 — Preliminary Salt Control Plan, prepared by Parsons-Redpath, December, 1984.

U.S. DOE, 1983 — Strategic Petroleum Reserve Annual Report. U.S. Department of Energy, DOE/EP-0045/1. February, 1983.

U.S. DOE, 1984 — Draft Environmental Assessment(s). DOE/RW 0014 and 0015. U.S. Department of Energy, December, 1984.

U.S. DOE, 1984a — Offshore Oceanographic and Environmental Monitoring Services for the Strategic Petroleum Reserve. U.S. Department of Energy. DOE/PO/10850-3. Texas A&M University, 1984.

WIPP, 1984 — SPDV Shaft Outfitting and Underground Excavation, Waste Isolation Pilot Plant, January, 1984.

TABLE 1.

SALT DISPOSAL OPTIONS FOR WEST TEXAS SITES:
PRELIMINARY COST ESTIMATES

DISPOSAL OPTION	DISPOSAL LOCATION	APPROXIMATE DISTANCE (Miles)	COST ($/ton)
ONSITE STORAGE	ON SITE	0	Negligible
OFFSITE LANDFILL	CLOVIS, NM	100	16
DEEP WELL INJECTION	UNDEFINED	20 (Assumed)	45
OFFSITE SALT FLATS	SALT FLAT, TX	500	26
EXHAUSTED SALT MINES	CARLSBAD, NM	200	41
SALE OR TRANSFER	HUTCHINSON, KS	300	16
OFFSHORE BRINE DISPOSAL	BRYAN MOUND, TX	600	42
OFFSHORE DUMPING	GULF OF MEXICO	600	30
SLURRY DUMPING	OGDEN, UT	650	36

REFERENCES

Intera, 1978 — Radiological Waste Storage Analysis, prepared for Sandia Laboratories. Intera Environmental Consultants, Inc., 11511 Katy Freeway, Houston, TX 77079, Fall, 1978.

Langill, 1983 — Preliminary Investigation of Deep Well Disposal of Excess Repository Salt. Report to Battelle/ONWI, January 13, 1983.

NUS, 1983 — Disposal Alternatives and Recommendations for Repository. NUS Corporation. September, 1983.

Parsons-Brinkerhoff/ PB-KBB, 1984 — Exploratory Shaft Facility Report on Wastes, Dispoal Options, and Issues. E5-140-01, June, 1984.

Parsons-Redpath, 1984 — Preliminary Salt Control Plan, prepared by Parsons-Redpath, December, 1984.

U.S. DOE, 1983 — Strategic Petroleum Reserve Annual Report. U.S. Department of Energy, DOE/EP-0045/1. February, 1983.

U.S. DOE, 1984 — Draft Environmental Assessment(s). DOE/RW 0014 and 0015. U.S. Department of Energy, December, 1984.

U.S. DOE, 1984a — Offshore Oceanographic and Environmental Monitoring Services for the Strategic Petroleum Reserve. U.S. Department of Energy. DOE/PO/10850-3. Texas A&M University, 1984.

WIPP, 1984 — SPDV Shaft Outfitting and Underground Excavation, Waste Isolation Pilot Plant, January, 1984.

REFERENCES

Intera, 1978 — Radiological Waste Storage Analysis, prepared for Sandia Laboratories. Intera Environmental Consultants, Inc., 11511 Katy Freeway, Houston, TX 77079, Fall, 1978.

Langill, 1983 — Preliminary Investigation of Deep Well Disposal of Excess Repository Salt. Report to Battelle/ONWI, January 13, 1983.

NUS, 1983 — Disposal Alternatives and Recommendations for Repository. NUS Corporation. September, 1983.

Parsons-Brinkerhoff/ PB-KBB, 1984 — Exploratory Shaft Facility Report on Wastes, Dispoal Options, and Issues. E5-140-01, June, 1984.

Parsons-Redpath, 1984 — Preliminary Salt Control Plan, prepared by Parsons-Redpath, December, 1984.

U.S. DOE, 1983 — Strategic Petroleum Reserve Annual Report. U.S. Department of Energy, DOE/EP-0045/1. February, 1983.

U.S. DOE, 1984 — Draft Environmental Assessment(s). DOE/RW 0014 and 0015. U.S. Department of Energy, December, 1984.

U.S. DOE, 1984a — Offshore Oceanographic and Environmental Monitoring Services for the Strategic Petroleum Reserve. U.S. Department of Energy. DOE/PO/10850-3. Texas A&M University, 1984.

WIPP, 1984 — SPDV Shaft Outfitting and Underground Excavation, Waste Isolation Pilot Plant, January, 1984.

COMMISSIONER
OF AGRICULTURE
P. O. BOX 12847
AUSTIN, TEXAS 78711 · (512) 475-2760

Economic Effect of High-Level Nuclear Waste Repository in Texas
Testimony Before U.S. Committee on Environment and Public Works
Texas Agriculture Commissioner Jim Hightower
Hereford, Texas
February 11, 1985

Senator Bentsen, thank you for this opportunity to appear before the U.S. Senate Committee on Environment and Public Works. I'm glad someone in Washington is worrying about what a nuclear dump would mean for Texas farmers and food processors, and for all the rest of us who enjoy their high-quality produce.

The U.S. Department of Energy has blindly asserted that their plan to sweep nuclear waste under the productive agricultural carpet of the Panhandle will not be a big deal to the local economy. But, they show no sign that they even know what the local economy is. In nearly 1,000 pages of information about the repository, the DOE Draft Environmental Assessment for Deaf Smith County devotes just ten pages of text to the dump's impact on agriculture. They conclude that the effect on farming would be "slight,...negligible,...not substantial."

These folks are farther out than Pluto, living in an isolated world of statistics, computer models and samples of salt beds. You don't have to be any brighter than a 20-watt bulb to know that burying nuclear wastes under our own food and water is going to pose a contamination threat to both and reduce consumer confidence in the purity of our products. This dump threatens our state's most basic business, and it could wreck

farmland values and permanently destroy markets for Texas produce.

DOE's assumptions about the Texas agricultural economy are made from the misty, distant vantage point of Columbus, Ohio, and Washington, D.C. It is apparent from their flimsy report that their consultants and analysts didn't get any manure on their Guccis, didn't talk to any real farmers or business people to put a dose of reality in their report. If they had bothered to check with the people who try to make a living in this country, they would have learned in a New York minute that it will be an economic disaster to put 70,000 metric tons of the nastiest stuff ever created in the midst of one of the world's most productive centers for growing the food we eat. We may be rubes, but we know our business, and we know better than to buy bureaucratic descriptions like "slight...negligible...not substantial." We realize that, even without a leak, the public perception of possible contamination will have a major, negative effect on agricultural sales.

Not only are local people in the best position to make these judgments, all past evidence and simple commonsense support them: consumers don't want to eat food grown near something as deadly as high-level nuclear waste. The unknowns in this experiment are too numerous; the possibility of the unforeseen occuring is far too great of a risk. Put plainly, we don't think DOE knows what it's talking about, we can't believe their nonchalant assurances, and we don't trust them.

This is farming country, pure and simple--vegetables, wheat, corn, soybeans, cotton, cattle, sorghum, sugarbeets, you-name-it are produced in abundance here and shipped throughout the world. The Ogallala region on the High Plains of Texas brought in between 3 and 4 billion dollars in agricultural cash receipts in 1983. That's more than a third of the entire state's total for crops and livestock. And, as that money ripples through the economy, it generates about $10 billion in total economic activity for our state.

But it's not just the quantity of food production that is at risk DOE also is messing with the finest quality food goods, yet they failed even t address this unique, economic factor.

Deaf Smith County and the Texas Plains have a reputation for producing a great abundance of healthy, nutritious, pure food--beef, vegetables and grain that are, literally, shipped around the world. Arrowhead Mills, a major health-food producer, named some of their nationally distributed products after Deaf Smith County. Food producers recognize the importance of preserving this reputation for wholesomeness and unquestioned quality. That's why Cactus Feeders, Inc., of Dumas, the world's largest commercial cattle feeding operation, announced last month that they are voluntarily removing low-level antibiotics from their beef. They say that even though they've had no final proof that these antibiotics are harmful to humans, "the quality of the food supply must be beyond question." Co-owner Paul F. Engler says he has received

dozens of letters and phone calls from consumers thanking him for this decision. He doesn't want to see the mail that would pour in if a nuclear dump moves down the road from his feedyards in Wildorado or Tulia. Panhandle farmers and processors do not want to risk becoming another Three Mile Island, Love Canal or Bhophal: one more synonym for technological disaster.

Several major processors have already told us they won't play roulette with their products' reputation. They'll move. That means a loss of hundreds of jobs and the end of production contracts with area growers.

In addition to these major producers, the Deaf Smith and Swisher County areas are home to many smaller food processors, such as a tortilla factory here in Hereford that buys 500-million pounds of Deaf Smith corn each year for tortillas and chips sold in seven states. They don't know what they'll do if the repository comes here. And one vegetable shed in Hereford ships 2,500 truckloads a year of onions, potatoes, lettuce and carrots. Texas does not want to trade that for 8,000 truckloads of lethal radioactive waste.

Even if DOE is willing to write off the Panhandle as a "negligible" sacrifice for meeting their own artificial and unrealistic deadlines, are they really willing to write off a significant part of the U.S. food supply? Are they really willing to interrupt a food-production chain that starts with wheat seed at Richardson Seed Farms and ends up as bread on dinner tables across the nation?

Last year, 2.4 billion pounds of seed were grown over the Ogallala aquifer in Texas. The counties included in DOE's narrow definition of the impact area for the Deaf Smith site produced 211 million pounds of seed. These figures are not guesses or projections. They are based on TDA records that are audited regularly. This seed is worth an estimated $126 million per year for the Deaf Smith impact area and $1.4 billion for the Ogallala area.

One of Texas' most valuable seed producers is located in and next to the Deaf Smith repository site. Richardson Seed Farms produces foundation wheat seed that brings the newest strains of wheat to farms in six states. I know Mr. Richardson is going to provide you with further details, but I do want to emphasize that his operation is a unique resource. The Texas Department of Agriculture tests and certifies seed throughout the state, so the director of our seed division is speaking from broad experience when he says there is no one else in the southwest who can provide the same quality and volume of foundation seed production as Richardson Seed Farms.

There is no cleaner seed farm anywhere. That's why Texas A&M trusts their newest genetic discoveries to his meticulous care. Genetic scientists produce only a handful of seeds for each new hybrid. Are they going to send these precious new discoveries to be grown next to a nuclear dump? Are farmers going to trust seed grown here? Farmers want to know what they're planting. They do not want to run their own experiments to see what kind of wild mutations nuclear waste might produce.

Eighty-five percent of the world's sorghum seed is grown right here. It is shipped to Australia, Europe, South America--around the globe. Does DOE consider that a "negligible" impact on world food production? Do they realize that nearly 15 percent of the beef eaten in the United States comes from the very area they're eying as a waste dump? DOE may try to accuse us of provincialism, of falling prey to the "not in my back yard" syndrome. But let me tell you, the Panhandle is the back yard garden for a pretty big chunk of this country. For all their months of research about effects of the dump, DOE has never gone to local businesses and asked them what difference it would make to them. The Texas Department of Agriculture, in cooperation with Governor White, is going to do that: systematically contacting area businesses to learn how a nuclear dump will affect their purchases, employment, financing and markets. We will report results of this survey later this spring.

In the meantime, Panhandle farmers have already spoken out about the dump in no uncertain terms: They don't want it here. Testimony at earlier hearings leaves no doubt about where farmers stand. In addition, TDA and the Governor's Office conducted a scientific survey of farm operators in Deaf Smith and Swisher counties. Preliminary results were announced last fall, but we have some additional information to report to you now. Our survey includes responses from 564 farmers in the site counties. Less than one out of ten farmers who participated in the study believes that a nuclear waste repository will have no

effect on farming. Four out of five think it will be harder to sell their crops if a repository is built in their county, and 84 percent say their land values will go down.

These opinions are economic facts. You don't have to be the wizard of Wall Street to know that if potential buyers believe the price is going to go down, it is going down. In fact, nearly half of the farmers we surveyed say the value of their land has already been hurt by plans for a dump nearby. The DOE projects a "slight" effect on agriculture out in the year 2005, but farmers are being hurt right now by the possibility of this nasty neighbor moving to town.

A majority of farmers are trying to hold on, hoping that the nuclear cloud will pass by. But 13 percent of the farmers we surveyed have already changed their plans because of the repository. They have postponed expansion plans and delayed maintenance work.

Nearly half of the farmers we polled said they expect to make changes if their county is actually chosen for the dump. In answer to a general question--"what changes do you expect to make"--more than a hundred farmers said they plan to move, including some families that have been farming their land for three generations.

Farmers are not the only ones who fear for their health and their livelihood. Our survey shows four-fifths of the residents of the site counties oppose the dump. Sixty-one percent believe it is "very likely" that radiation will contaminate the Ogallala

if a repository is built here, 57 percent believe contamination of food is "very likely," and half consider it "very likely" that the repository would create health problems for residents.

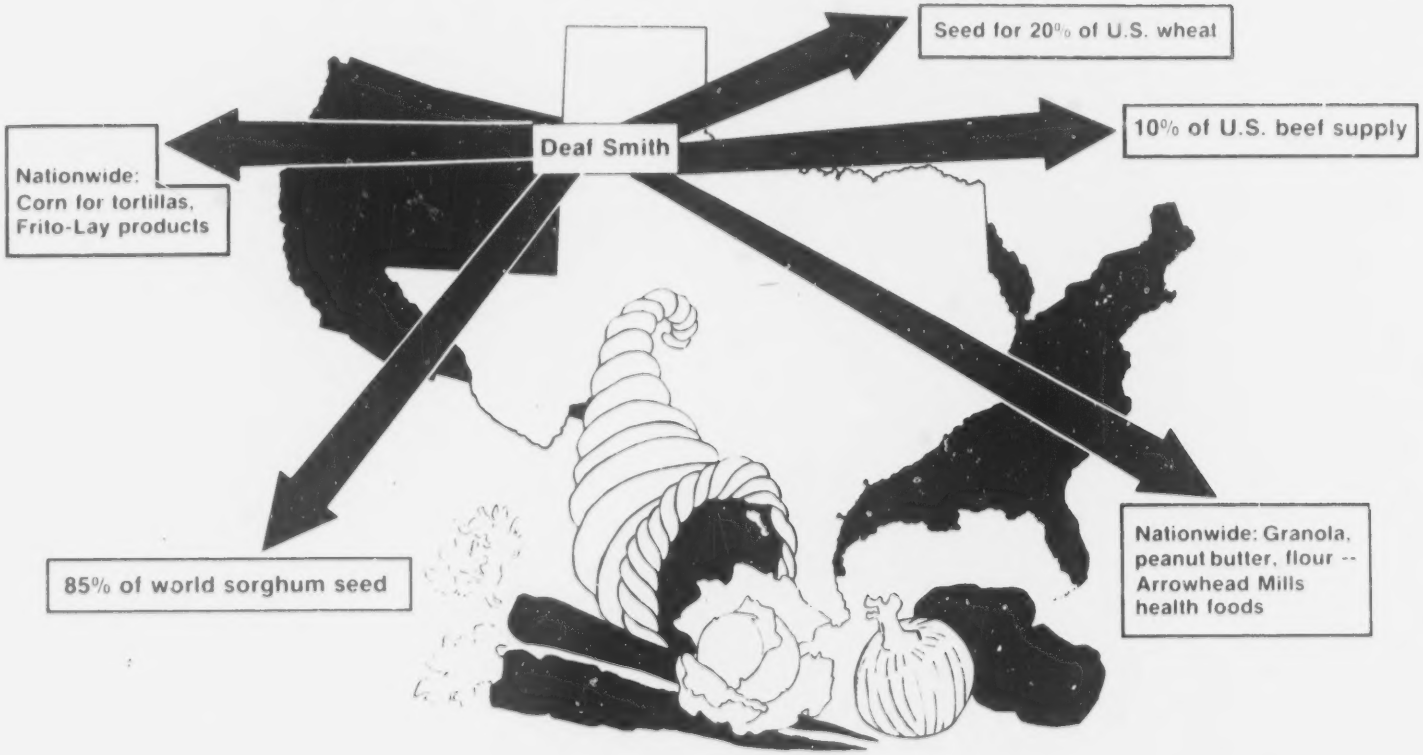
Despite this overwhelming public opposition and the dictates of commonsense, DOE is still here in Texas trotting out their socioeconomic models trying to convince us that nuclear waste shot through our land and water isn't going to bother anybody one bit. No wonder 73 percent of the farm operators we surveyed said they don't trust the federal government to build a nuclear waste repository that's safe. Sixty-three percent think DOE could ruin their land and water during test drilling even before a final repository site is even selected. And 83 percent said the DOE site selection process is unfair.

The agricultural economy is in trouble right now. The Texas Panhandle today is no Norman Rockwell vision of rural serenity and prosperity. Farmers are hurting. Good farmers are going broke. But here in Deaf Smith and Swisher counties we have part of the positive solution to the farm crisis. We have specialized, high-quality operations like Richardson Seed and Arrowhead Mills. We have food processors like Frito-Lay and Holly Sugar that keep those critical value-added food dollars circulating in the Texas economy. We have a brand new manure-burning electric power generator that brings safe, inexpensive energy to Texas cities and opens a new market for agriculture. Our sorghum seed produces a high-protein, heat and

drought resistant crop that can feed starving nations during the years ahead. That's where Texas farmers see their duty to the nation and the world.

We're here to feed people, and to protect our soil and water as vital resources for our nation's future. These agrarian entrepreneurs, this rich soil, this irreplaceable aquifer--all of these are natural resources that will be productive for us far longer than 10,000 years, if those of us in policy making positions don't do something unutterably stupid, such as DOE has proposed. We must be good stewards of these resources. Don't let them dump on our farms.

Deaf Smith Area Produce Shipped Worldwide



TESTIMONY OF WAYNE RICHARDSON
ON BEHALF OF POWER, INC.

GOOD AFTERNOON. I APPRECIATE THE OPPORTUNITY TO PRESENT TESTIMONY ON THE IMPACTS OF A NUCLEAR WASTE REPOSITORY.

I AM WAYNE RICHARDSON, PRESIDENT OF RICHARDSON SEED FARMS, WHICH IS THE ONLY FARM OF ITS KIND IN THE NATION PRODUCING CERTAIN VARIETIES OF HIGH QUALITY FOUNDATION SEEDS FOR 30 YEARS. I AM ALSO VICE PRESIDENT OF POWER (PEOPLE OPPOSED TO WASTE ENERGY REPOSITORIES), AN ORGANIZATION OF DEAF SMITH COUNTY CITIZENS, WHICH HAS BEEN ACTIVELY INVOLVED IN THE WASTE ISSUE FOR THE PAST TWO YEARS. I HAVE BEEN ON THE VEGA SCHOOL BOARD FOR 20 YEARS, AND HAVE BEEN ITS PRESIDENT FOR THE PAST 16 YEARS.

WITH ME THIS AFTERNOON AND AVAILABLE TO ANSWER QUESTIONS ARE TONYA KLEUSKENS, PRESIDENT OF POWER: DELBERT DEVIN, PRESIDENT OF STAND, THE SWISHER COUNTY CITIZENS ORGANIZATION: AND DON HANCOCK OF SOUTHWEST RESEARCH AND INFORMATION CENTER IN ALBUQUERQUE, WHO IS THE TECHNICAL CONSULTANT FOR BOTH POWER AND STAND.

I FULLY UNDERSTAND THAT NUCLEAR WASTE DISPOSAL IS A VITAL NATIONAL CONCERN, BUT I BELIEVE THE DOE'S SITE SELECTION PROGRAM IS VERY SERIOUSLY FLAWED, ESPECIALLY AS IT RELATES TO TEXAS. THE FACT THAT DOE HAS MOVED ITS SITE IN DEAF SMITH COUNTY TWICE IN THE PAST TWO YEARS BEFORE SETTLING ON THE PRESENT AREA, THE FACT THAT SEVERAL OF THE AFFECTED LANDOWNERS WERE NOT NOTIFIED THAT THEIR LAND WAS BEING CONSIDERED UNTIL ABOUT DECEMBER 1, 1984, AND THE FACT THAT DOE'S DOCUMENTS CONTAIN A LARGE AMOUNT OF MISINFORMATION COMBINE TO RAISE SIGNIFICANT QUESTIONS ABOUT THE QUALITY AND LEGALITY OF DOE'S WORK IN TEXAS. AS A RESULT, MY WIFE AND I AND 14 OTHER LANDOWNERS (OWNING OVER 5,000 ACRES IN THE NINE SQUARE MILE SITE) AND POWER, AND TWO SWISHER COUNTY LANDOWNERS, STAND, AND THE SWISHER COUNTY NUCLEAR DEVELOPMENT RIGHTS TRUST FILED SUIT AGAINST THE DOE'S SITE LOCATION PROCESS ON DECEMBER 19, 1984, IN THE 5th CIRCUIT COURT OF APPEALS, ALONG WITH THE STATE OF TEXAS. (CASE NO. 84-4826.)

WE ALSO INTEND TO PARTICIPATE ACTIVELY IN THE ENVIRONMENTAL ASSESSMENT HEARINGS. ALTHOUGH DOE HAS BEEN WORKING ON THE EAs FOR OVER 18 MONTHS, WE HAVE LESS THAN 90 DAYS TO COMMENT ON THEM. WE WOULD CERTAINLY APPRECIATE THE COMMITTEE ENCOURAGING THE DOE TO EXTEND THE COMMENT PERIOD FOR AT LEAST 60 ADDITIONAL DAYS.

1

MY TESTIMONY TODAY WILL FOCUS ON THE SOCIOECONOMIC IMPACTS OF A REPOSITORY IN DEAF SMITH COUNTY. VERY SIMILAR NEGATIVE IMPACTS WOULD ALSO OCCUR IN SWISHER COUNTY. I WANT TO EMPHASIZE THAT MOST OF THE IMPACTS THAT I WILL MENTION OCCUR AT THE BEGINNING OF SITE CHARACTERIZATION--WITH THE DOE DECISION TO DO SITE CHARACTERIZATION AND THE RESULTING LAND CONDEMNATION. SUCH CONDEMNATION WOULD TAKE YEARS AND COST PERHAPS HUNDREDS OF MILLIONS OF DOLLARS AND WOULD MEAN THAT SITE WOULD LIKELY BE UNDER CONSIDERATION FOR A REPOSITORY FOR AT LEAST 15 YEARS EVEN IF IT IS NOT SELECTED FOR THE FIRST REPOSITORY (SINCE IT WOULD ALSO BE CONSIDERED FOR THE SECOND REPOSIT

1. A repository would eliminate tens of millions of dollars of production annually from land destroyed at the proposed site.

Over 95% of the Deaf Smith County site is irrigated, highly PRODUCTIVE FARMLAND, ALTHOUGH DOE'S DRAFT EA, p. 5-117, SAYS ONLY ABOUT 50% IS IRRIGATED. (The EA'S state 17 wells--actual count is 36.) CROPS GROWN ON THE SITE INCLUDE SUGARBEETS, WHEAT, MILO, CORN, GRAIN SORGHUM, AND SUNFLOWERS. (The EA'S did not mention the Food Grade sunflower cleaning plant on the site.) (The EA'S state 170 acres of sugarbeets--1984 actual acres was 270.) A CONSERVATIVE ESTIMATE OF GROSS RECEIPTS ANNUALLY FROM THE NINE SQUARE MILES IS $2 MILLION (DOE ESTIMATES THE GROSS RECEIPTS AT $625,070.00 IN 1982 DOLLARS (draft EA, p. 5-117.) ACCORDING TO DOE THE TOTAL ESTIMATED REVENUES LOST IN 1996 WOULD BE JUST UNDER $1 MILLION (draft EA, p.5-129.) IT IS IMPORTANT TO POINT OUT THAT ALL DOE'S FIGURES ARE REGIONAL ESTIMATES, BECAUSE THEY HAVE NEVER MET WITH INDIVIDUAL LANDOWNERS TO FIND OUT ABOUT WHAT THEY ACTUALLY PRODUCE.

ADDITIONALLY, THIS FIGURE INCLUDES NO ESTIMATE OF THE LOSS OF PRODUCTION FROM LAND OUTSIDE THE SITE. AT A MINIMUM, THREE MORE SECTIONS OF RICHARDSON SEED COMPANY LAND WOULD BE UNUSABLE AT ITS CURRENT LEVEL BECAUSE OF THE LOSS OF THE 5 OGALALLA AND 1 LARGE SANTA ROSA WELL (Block K-6, Section 29) USED TO IRRIGATE THOSE SECTIONS THROUGH A 12-MILE NETWORK OF UNDERGROUND PIPE. (THIS SANTA ROSA WELL IS ALSO THE FUTURE WATER SUPPLY FOR THE CITY OF VEGA.) RICHARDSON SEED COMPANY SALES ARE ABOUT $4 MILLION A YEAR, (WHICH DOES NOT INCLUDE THE REVENUES OF RICHARDSON CATTLE COMPANY.) THE FOUNDATION TAES HARD RED WINTER WHEAT VARIETIES MAINTAINED AT RICHARDSON SEED COMPANY (90% OF WHICH COMES FROM THE LAND IN OR ADJOINING THE SITE

WERE USED IN 1984 TO PLANT 8,430,000 ACRES OF WHEAT IN 6 STATES WITH A VALUE OF ABOUT $1 BILLION. ATTACHED TO MY TESTIMONY IS A BREAKDOWN OF THESE SEVEN VARIETIES BY STATES AS COMPILED BY THE USDA STATISTICAL REPORTING SERVICE. ADDITIONALLY, 1,600,000 ACRES OF GRAIN SORGHUM, 500,000 ACRES OF HAY CROPS WITH A VALUE OF ABOUT $250,000,000 WAS PRODUCED WITH SEED FROM RICHARDSON SEED COMPANY. THUS, DESPITE DOE'S STATEMENTS TO THE CONTRARY, THE DIRECT ECONOMIC IMPACTS ON AGRICULTURE EXTEND INTO SEVERAL STATES.

WHILE I WILL NOT GO INTO AS MUCH DETAIL ABOUT SWISHER COUNTY, IT IS WORTH NOTING THAT IN THEIR DRAFT EA DOE NOT ONLY ALSO UNDERESTIMATES THE AMOUNT OF IRRIGATED FARMLAND, BUT ALSO GROSSLY UNDERESTIMATES THE AMOUNT OF LIVESTOCK GRAZING AT THE SITE. THE DRAFT EA SAYS THAT THERE ARE PROBABLY LESS THAN 200 HEAD GRAZING ON THE SITE (p.5-116), WHEN IN REALITY THERE ARE MORE THAN 1,000 HEAD FOR SEVERAL MONTHS OF THE YEAR. AGAIN, THEREFORE, DOE HAS GREATLY UNDERESTIMATED THE AMOUNT OF LOST REVENUES JUST FROM CONDEMNING THE SITE.

2. Agricultural production in other parts of the area would be severely disrupted even if there are no accidents or leakage.

IN ADDITION TO LOSING THE FOUNDATION SEED SOURCE FOR GRAINS GROWN IN SEVEN STATES AS ALREADY MENTIONED, RICHARDSON SEED FARMS PURCHASES ABOUT 85% OF ITS HYBRID SORGHUM SEED FROM OTHER FARMERS. THE REVENUES RECEIVED FROM SUCH PRODUCTION ARE HIGHER THAN WHAT THEY WOULD OTHERWISE RECEIVE, AND WILL AMOUNT TO APPROXIMATELY $2,000,000 ANNUALLY.

ARROWHEAD MILLS, FRITO-LAY, HOLLY SUGAR AND OTHER AGRICULTURAL PRODUCERS WILL ALSO BE AFFECTED BY A REPOSITORY, AND THE COMMITTEE CAN RECEIVE INFORMATION ON THIS ISSUE DIRECTLY FROM THE AFFECTED COMPANIES.

3. DOE'S activities in the area and their interest in having potential sites in the Texas Panhandle have already caused severe financial losses.

LANDOWNERS AND OPERATORS IN AND AROUND THE PROPOSED SITES IN BOTH COUNTIES ARE IN ECONOMIC LIMBO. LENDERS ARE RELUCTANT TO GIVE LONG-TERM LOANS AND DECLINING PROPERTY VALUES REDUCE DRAMATICALLY THE COLLATERAL THAT FARMERS HAVE. PROPERTY VALUES HAVE DEMONSTRABLY DECLINED. AREA REALTORS VALUE IRRIGATED FARMLAND AT $750 to $1,000 PER ACRE IN SURROUNDING COUNTIES. ONE EXAMPLE OF THE DECLINING

45-432 O—85——6

VALUES IS THAT WITHIN THE LAST TWO WEEKS 160 ACRES OF IRRIGATED FARMLAND LESS THAN ONE MILE OF THE SITE SOLD FOR $400 PER ACRE AFTER BEING ON THE MARKET FOR TWO MONTHS. THE EQUITY LOSSES IN THE AREA ARE IN THE MULTI-MILLIONS OF DOLLARS. THE POSSIBILITY OF NRC CONTROL OF UP TO 77,000 ACRES AROUND THE SHAFT SITE IS ALSO A VERY DEPRESSING FACTOR ON THE LAND MARKET. (AN AREA 6.2 MILE RADIUS FROM SHAFT SITE.)

IN 1984 PENNZOIL LEASED OVER 15,000 ACRES OF LAND NORTH OF THE SITE FOR $25.00 to $30.00 PER ACRE BONUS RENTAL AND HAS RECENTLY BEEN RENEWING THESE LEASES. BUT IT HAS NOT LEASED LAND AT THE SITE. THUS, LANDOWNERS IN AN AROUND THE SITE MAY WELL HAVE ALREADY LOST THOUSANDS OF DOLLARS IN ROYALTIES.

4. The City of Vega would be severely and negatively affected by a repository.

VEGA'S WATER CURRENTLY COMES FROM FIVE OGALLALA WELLS. ITS LONG TERM SOURCE OF WATER IS THE RICHARDSON SANTA ROSA WELL THAT I PREVIOUSLY MENTIONED AND ON WHICH THE CITY HAS A LONG-TERM CONTRACT, A COPY OF WHICH IS ATTACHED TO MY TESTIMONY. THE MAYOR AND OTHER CITY OFFICIALS DO NOT KNOW OF ANY OTHER SOURCE FOR WATER, AND ANY OTHER SOURCE LOCATED WOULD BE DISTANT AND EXTREMELY EXPENSIVE.

THIS WELL IS IN THE SANTA ROSA OR DOCKUM FORMATION. IT WAS DRILLED IN 1977 TO A DEPTH OF 872 FEET AND HAS EXCELLENT QUALITY WATER. THIS WELL HAS PUMPED APPROXIMATELY 4,000 ACRE FEET OF WATER WITH A MEASURED DECLINE OF SEVEN INCHES PER YEAR. AT CURRENT CONSUMPTION LEVELS IN VEGA AND PRODUCTION LEVELS IN THE WELL, IT COULD SUPPLY VEGA'S WATER FOR 300 YEARS AND STILL HAVE OVER 50 FEET OF WATER REMAINING.

AS SCHOOL BOARD PRESIDENT I AM VERY AWARE OF THE COSTS--AND SUBSTANTIAL TAX INCREASES--NECESSARY TO BUILD NEW CLASSROOMS, HIRE NEW TEACHERS, AND PROVIDE OTHER SERVICES FOR CHILDREN OF CONSTRUCTION WORKERS WHO WOULD COME INTO THE AREA. I WANT TO POINT OUT THAT DESPITE THE DRAFT EAS STATEMENT (p. 3-208) THAT VEGA SCHOOL HAS AN EXCESS CAPACITY OF 176 STUDENTS, THE SCHOOL CURRENTLY DOES NOT MEET THE TEXAS EDUCATION AGENCY'S SUGGESTED REQUIREMENTS. THUS, ANY SIGNIFICANT INCREASE IN THE NUMBER OF STUDENTS (WHICH WOULD OCCUR FROM CONSTRUCTION WORKERS DURING SITE CHARACTERIZATION) WOULD REQUIRE SUBSTANTIAL EXPENDITURES FOR NEW CONSTRUCTION AND TEACHERS. IN THE SHORT RUN, IT WOULD RESULT IN OVERCROWDED CLASSROOMS

AND DECREASED QUALITY OF EDUCATION. THE TAX BASE(APPRAISED VALUE) TIMES THE MAXIMUM STATUTORY ALLOWED TAX RATE (a 58% increase) WOULD NOT GENERATE ENOUGH REVENUE TO MEET MINIMUM STATE REQUIREMENTS FOR OPERATION AND INSTRUCTION IF ADDITIONAL BONDED INDEBTEDNESS IS REQUIRED, AND GIVEN THE OVERWHELMING COMMUNITY RESENTMENT TOWARD A NUCLEAR WASTE REPOSITORY, THERE WOULD BE ABSOLUTELY NO CHANCE OF PASSING A BOND ISSUE.

IN ADDITION, THE DISRUPTION IN THE SCHOOLS (AND THE COMMUNITY) FROM HAVING CHILDREN WITH DIFFERENT BACKGROUNDS IS INCALCULABLE. BUT WE KNOW FROM RECENT EXPERIENCE WITH CHILDREN OF OIL FIELD WORKERS THAT ADDITIONAL CHILDREN WOULD SIGNIFICANTLY IMPACT THE SCHOOLS. LOCAL RESENTMENT TOWARD ANYONE CONNCECTED WITH THE REPOSITORY CHARACTERIZATION WOULD CREATE A DIVIDED COMMUNITY AND THE POSSIBILITY OF SOME RATHER VIOLENT CONFRONTATIONS.

THERE ARE OTHER SEWAGE AND STREET CONCERNS OF VEGA, WHICH ARE DESCRIBED IN A REPORT DONE BY WEST TEXAS CONSULTANTS AND JUST RELEASED. I HAVE ALREADY PROVIDED A COPY OF THAT REPORT TO THE COMMITTEE.

5. Other agricultural land and businesses will be displaced from the influx of construction workers.

DOE'S DRAFT ENVIRONMENTAL ASSESSMENT, PAGES 5-123 and 5-127, ESTIMATES THAT ABOUT $165,000 ANNUALLY IN CROP AND LIVESTOCK REVENUES WOULD BE LOST BECAUSE OF IN-MIGRATION. AS WITH OTHER DOE "GESTIMATES," WE BELIEVE THIS TO BE GROSSLY UNDERSTATED. FOR EXAMPLE, DOE ESTIMATES THAT MOST OF THE CONSTRUCTION WORKERS WILL LIVE IN AMARILLO, CANYON, AND HEREFORD, WITH ONLY ABOUT 9% LIVING IN VEGA OR RURAL AREAS NEARBY THE SITE (draft EA, p. 5-104.) VEGA'S PAST EXPERIENCE WITH HIGHWAY CONSTRUCTION CREWS, SIESMOGRACHING ACTIVITY AND OIL AND GAS EXPLORATION CREWS, INDICATES THAT A LARGE PERCENTAGE OF THE WORKERS WILL ATTEMPT TO LOCATE IN OR NEAR VEGA. THE EXPERIENCE OF MANY OTHER AREAS INDICATES THAT GIVEN THE TRANSIENT NATURE OF CONSTRUCTION WORKERS, MANY OF THEM WILL LIVE IN MOBILE HOMES NEAR THE SITE AND FEW WILL INVEST IN BUYING A HOUSE. SINCE RENTAL PROPERTIES ARE NOT READILY AVAILABLE IN TOWNS, LAND FOR TRAILER PARKS UNDOUBTEDLY WILL BE MUCH MORE THAN DOE ESTIMATES.

6. Impacts on the Ogallala aquifer.

THE OGALLALA AQUIFER IS THE LARGEST IN THE UNITED STATES. IN AUGUST 1984 IT CONTAINED 19 TIMES MORE WATER THAN THE TOTAL OF THE 71 LARGEST RESERVOIRS IN TEXAS. THAT A REPOSITORY WHICH WOULD PENETRATE SUCH AN AQUIFER, WHICH SUPPLIES DRINKING AND IRRIGATIO' WATER TO EIGHT STATES--TEXAS, NEW MEXICO, OKLAHOMA, KANSAS, COLORADO, NEBRASKA, SOUTH DAKOTA, AND WYOMING--IS EVEN BEING CONSIDERED IS ABSOLUTELY INCREDIBLE.

THE OGALLALA AQUIFER CURRENTLY SUPPORTS A MULTI-BILLION AGRICULTURE INDUSTRY OF VEGETABLES, WHEAT, CORN, SORGHUM, AND SUGARBEETS, NOT TO MENTION ITS BEING THE LARGEST CATTLE FEEDING AREA IN THE NATION (OVER 4 MILLION HEAD IN 1984.) THE HIGH PLAINS AREA ALSO PRODUCES OVER 90% OF THE WORLD'S SUPPLY OF HYBRID SORGHUM SEED. SUCH RESOURCES ARE, OF COURSE, IMPORTANT ECONOMIC RESOURCES FOR THE AREA, THE UNITED STATES, AND THE WORLD (SINCE MANY PRODUCTS ARE EXPORTED.) THAT SUCH RESOURCES COULD BE AND ARE THREATENED BY A REPOSITORY IS UNDISPUTABLE, EVEN THOUGH THE ACTUAL IMPACTS CANNOT BE CALCULATED.

CONCLUSION:

IN CLOSING LET ME QUICKLY RE-CAP SOME OF THE MAJOR ISSUES:

THE OGALLALA AQUIFER

SANTA ROSA AQUIFER AND THE LOSS OF THE FUTURE WATER SUPPLY FOR THE CITY OF VEGA.

TREMENDOUS ECONOMIC LOSS FROM LOST AGRICULTURAL PRODUCTION AND THE FACT THAT DOE PERSONEL HAVE NOT BEEN ON THE SITE AND INVESTIGATED.

THE 30-40% DECLINE IN LAND VALUES AND THE ACCOMPANYING EQUITY LOSSES WHICH ARE THE LIFE SAVINGS OF MANY LANDOWNERS.

THE LOSS OF THE FOUNDATION SEED SOURCE FOR 8-9 MILLION ACRES OF WHEAT.

THE LACK OF FACILITIES IN THE CITY OF VEGA TO HANDLE THE LARGE INFLUX OF WORKERS.

THE LACK OF STAFF AND FACILITIES AT VEGA INDEPENDENT SCHOOL TO HANDLE THE EXPECTED INCREASED ENROLLMENT.

MY TESTIMONY HAS POINTED OUT SOME OF THE ECONOMIC LOSSES THAT WOULD CERTAINLY OCCUR FROM SITE CHARACTERIZATION AND FROM A REPOSITORY.

ALONG WITH OTHER IMPACTS THAT WILL LIKELY OCCUR. TO ASK THE CITIZENS OF THIS AREA TO LIVE UNDER SUCH A SHADOW OF UNCERTAINTY ABOUT THE FUTURE FOR 5 to 15 YEARS IS EXTREMELY STRESSFULL AND NOT IN THE BEST HUMAN RIGHTS TRADITION OF THESE GREAT UNITED STATES OF AMERICA. NONE OF THESE NEGATIVE IMPACTS INCLUDES COSTS FROM ANY OF THE INNUMERABLE ACCIDENT POSSIBILITIES WHICH COULD OCCUR DURING REPOSITORY OPERATION OR OVER THE THOUSANDS OF YEARS THAT SOME OF THE MATERIALS BURIED WOULD BE TOXIC.

THANK YOU AGAIN FOR THIS OPPORTUNITY TO TESTIFY. I WOULD BE HAPPY TO ANSWER ANY QUESTIONS THAT YOU HAVE.

Texas Department of Health

Robert Bernstein, M.D., F.A.C.P.
Commissioner

Robert A. MacLean, M.D.
Deputy Commissioner
Professional Services

Hermas L. Miller
Deputy Commissioner
Management and Administration

1100 West 49th Street
Austin, Texas 78756
(512) 458-7111

Members of the Board

Ron J. Anderson, M.D., Chairman
Laurance N. Nickey, M.D., F.A.A.P., Vice-Chairman
Bob D. Glaze, D.C., Secretary
Johnnie M. Benson, F.A.C.N.H.A.
Sister Bernard Marie Borgmeyer, R.N., F.A.C.H.A.
Frank Bryant, Jr., M.D., F.A.A.F.P.
Joaquin G. Cigarroa, Jr., M.D.
Barry D. Cunningham, D.D.S.
Ben M. Durr, A.C.H.A.
William J. Foran
Dennis K. McIntosh, D.V.M.
Robert D. Moreton, M.D., F.A.C.R.
Joe N. Pyle, P.E.
Richard W. Ragsdale, O.D.
Arthur L. Raines, M.D.
Isadore Roosth
Barbara T. Slover, R.Ph.
Max M. Stettner, D.O.

March 4, 1985

The Honorable Lloyd Bentsen
Committee on Environment and Public Works
United States Senate
410 Dirkson Senate Office Building
Washington, D.C. 20510

Dear Senator Bentsen:

Thank you for your letter of February 5, 1985, about your committee hearing on the U.S. Department of Energy (DOE) draft environmental assessment of the Deaf Smith County site as a possible site for high-level nuclear waste storage.

I am certainly aware of the concerns of the citizens for proper protection of the vital Ogallala aquifer and their agri-business in the area.

The primary Texas interface with the DOE on the high-level nuclear waste storage site selection process has been through the Governor's office. Our Agency has provided comments to the Governor with regard to the environmental assessment requirements as they relate to health issues. The Governor has incorporated our comments into correspondence with the DOE.

One major issue, in my view, relating to the site selection process throughout the nation is the confidence of the citizenry in the governmental processes of decision making.

In order to address the concerns of the citizenry and elected officials on highly technical issues such as this, it seems to me that assessments must not only contain the scientific and technical data but also assign risk factors to each aspect in language that can be understood by the nontechnical citizens. Once the risks are put in perspective the decision becomes one of determining if those risks are acceptable to the affected population. Only through effective communication of these factors can we hope that people will be able to make sound decisions regarding acceptance or rejection of siting such facilities in any location.

Thank you for asking me to express my views on this issue. I am told that the Governor will be providing the DOE with a detailed comment on the draft environmental assessment on behalf of Texas.

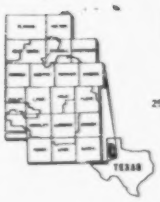
Please excuse the date of our response. Although your letter was dated February 5, 1985, it did not reach my office until February 19.

Sincerely,

Bob Bernstein

Robert Bernstein, M.D., F.A.C.P.
Commissioner of Health

cc: The Honorable Mark White, Governor of Texas
Ron J. Anderson, M.D., Chairman, Texas Board of Health



HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

2930 Avenue Q LUBBOCK, TEXAS 79405 AC/806 762-0181

BOARD OF DIRECTORS

JAMES MITCHELL	President
MACK HICKS	Vice President
WEBB GOBER	Secretary-Treasurer
JIM CONKWRIGHT	Member
GILBERT FAWVER	Member
A. WAYNE WYATT	Manager

February 26, 1985

The Honorable Lloyd Bentsen
U. S. Senator
Russel State Office Building, Room 240
Washington, D. C. 20510

Dear Senator Bentsen:

We appreciate very much your interest in our problems with the Department of Energy as they continue to disrupt our communities in their pursuit of a site to store high level nuclear waste.

We attended the hearing in Hereford, Texas on February 11, 1985, but due to time constraints, were unable to present testimony. As you suggested, we are providing written testimony.

The DOE contends that both of the High Plains of Texas sites are isolated or cut off from the northern part of the aquifer. This is absolutely not true. We are providing the following data to support our statement.

Included with this letter is a copy of a map from the Department of Interior, United States Geological Survey's Hydrologic Atlases 648. This map illustrates the area covered by the Ogallala Formation, et. al., and the 1980 saturated thickness of the High Plains Aquifer (Ogallala, et. al.) in the eight Great Plains States. We have noted on the map the approximate locations of the DOE sites in Deaf Smith and Swisher Counties. You will observe from the map that the aquifer at the site is directly connected hydrologically to the entire 176,940 square mile area covered by the aquifer.

The DOE also contends that the area will be out of water in a few years and doesn't need to be protected. We differ with this opinion and offer the following to support our position. Included is a copy of the September 1983 "Cross Section" which contains a map illustrating the 1980 saturated thickness of the Ogallala Aquifer in the High Plains of Texas and a map illustrating the Texas Department of Water Resources estimate of what the saturated thickness of the aquifer will be in the year 2000. Again, we have noted on the map the location of the DOE's sites in Deaf Smith and Swisher County in Texas. On page four of this same issue of "The Cross Section", the estimated volume of water in acre-feet are provided for each of the 42 counties

in the High Plains of Texas for the year 1980 and as estimated that will be available in the year 2000 by the Texas Department of Water Resources.

We have made detailed studies of the Ogallala Formation and the Ogallala Aquifer in Deaf Smith County, Texas. Copies of all data have been provided free of charge to the DOE. The following is an example of some of the data that has been provided to date.

Enclosed is a Hydrologic Atlas for Deaf Smith County, Texas, compiled by this Water District. This atlas contains a series of four maps with explanation text. The maps illustrate, 1) the elevation of the land surface in Deaf Smith County, Texas, 2) the elevation of the base of the Ogallala in Deaf Smith County, Texas, 3) the elevation of the water table in 1980 in Deaf Smith County, Texas, and 4) the saturated thickness of the Ogallala Aquifer in 1980 in Deaf Smith County, Texas. Again, we have indicated the approximate location of the DOE site on each of the four maps.

The DOE reproduced these maps and published them in their reports with no credit or reference to the Water District. We consider this very rude as well as having concern that possibly one of their employees gave our data to a contractor who in turn re-labeled the maps and sold them back to the DOE.

In addition to the gravity water stored in the Ogallala, there are tremendous quantities of capillary water stored in the wet sands of the formation above the current water table. We are learning to recover this water by using methods similar to those used in the petroleum industry in their secondary recovery of oil and gas. Enclosed is the March 1983 issue of "The Cross Section" which describes in some detail the occurrence of this water, and its potential to our area. This data has also been provided to the DOE; however, they have not chosen to acknowledge that capillary water occurs in the Ogallala Formation nor that its protection is of vast importance. Also, they have not chosen to acknowledge that the Santa Rosa sandstone Aquifer occurs in the area of either of the sites. We recently conducted a yield test on a well completed in the Santa Rosa Formation on the Deaf Smith County site and it is currently producing in excess of 900 gallons per minute. Enclosed is a map illustrating the area covered by the Santa Rosa Formation which contains fresh water. The location of both DOE sites has been marked on this map. The complete ignorance of the existence of the Santa Rosa Aquifer by the DOE after more than two years of study of the area causes us to doubt very seriously their technical competence.

Also enclosed is a paper, "Surfical Effects of Deep-Seated Permian Salt Dissolution, Northern Permian Basin, Texas and New Mexico", by C. C. Reeves, Ph.D., Professor of Geology, Texas Tech University. This

paper expresses concern about dissolution of deep-seated Permian salt beds which may destroy the geologic integrity of the salt as a host rock for storage of high level nuclear waste. Should Dr. Reeves be correct in his assumptions, it would be a tragic mistake to store the nuclear waste in this salt section in Deaf Smith County, Texas.

Reference was made at the Deaf Smith County hearing of the effects on land prices that the DOE site selection has caused. Enclosed is a copy of a table listing the average sale price in 1984 as compiled by our appraiser, Mr. B. L. Jones. The sales data has been reviewed and approved for use in claiming cost-in-water income depletion allowances for water used in irrigation farming by IRS Engineers stationed in Dallas (Stonewell Brinkman and Jack Page).

Testimony was given at the Hereford hearing that a 160 acre tract in the vicinity of the DOE site had recently sold for $400 per acre. Our data indicates that the average sale price for land in Deaf Smith County in 1984 was $594 per acre. The $400 per acre is only 67 percent of that price. This should be ample proof that DOE activities have in fact depressed land prices in the area.

Again, we appreciate your interest and concern. We will be pleased to provide you additional comments on other matters relating to the DOE sites if they would be of value.

Yours,

A. Wayne Wyatt

A. Wayne Wyatt
Manager

AWW:cr
cc: Deaf Smith County Committeemen
Mr. Jim Conkwright
Mr. Steve Frishman
Governor Mark White

Bud to Blossom Garden Club
144 Mimosa
Hereford, TX 79045

February 11, 1985

Committee on Environment and Public Works
United States Senate
Lloyd Bentsen, Chairman
Washington D.C. 20510

Dear Senators

This letter represents the Bud to Blossom Garden Club. We are not an organization of socialites who meet for silver tea and dainty sandwiches, perhaps admiring a flower or two. We are involved in the serious study of the propagation of food plants as well as flowers. We are as concerned with an environment that is harmonious for man and plants as we are with flower design. Perhaps more, because without clean air, soil and water the beauty of flowers and the nourishment of fruits and vegetables would be lost to us. We feel a need to keep this delicate balance of nature secure. We believe the proposed nuclear waste repository for Deaf Smith County threatens the security of this balance.

We make our homes on the High Plains and depend on the Ogallala aquifer for drinking water as well as irrigation of our fertile soil. We feel the proposed nuclear repository poses a direct threat to this aquifer. The reasons are as follows:

1. Radiation in the stored cannisters would be at significantly dangerous levels for hundreds of years after the repository is sealed.

2. There are no plans to monitor the shaft, water or surrounding salt dome for leaking radiation after the repository is sealed.

3. There are no plans for the retrieval of cannisters if a leak is detected or decontamination of the aquifer if salt or radiation leaks into it.

4. The cannisters are untested and could crack or deteriorate earlier than the DOE predicts leaking high level radiation into the water and soil.

5. The drilling technique that will be used to construct the shaft through the aquifer is highly experimental at such a large scale. If the procedure proves faulty, the Ogallala could be contaminated with salt making it unfit to drink.

6. A geoscientist predicts a migration of land beneath the surface due to the high amount of energy given off by the waste. This could cause the seal on the dump site to be breached either allowing the waste to spill out into the Ogallala or allowing the Ogallala to flow into the containment chamber.

7. Local farmers have reported land migration which has cracked their water wells. The salt dome itself is believed to be unstable.

8. The drilling procedure will consume significant amounts of water. Water which we can ill-afford to spare.

9. Many agriculture related businesses have expressed concern over being associated with an area near the nuclear repository and may relocate their oporations, herming the local economy.

The Department of Energy refutes much of this information. They quote scientific data in support of the nuclear repository. Yet, there are other equally qualified scientists who feel that the dump site would be a threat to the Ogallala and life on the High Plains. Can we gamble with this precious resource? As long as there is even a slim chance that the Ogallala would be contaminated, it is too great a chance to take.

We expect you, as our elected representatives, to stand firm in opposition to the nuclear repository in Deaf Smith County. We pledge to continue to study and promote soil and water conservation and support you in these endeavors.

Sincerely,

Bud to Blossom Garden Club

Amarillo, Texas
February 10, 1985

The Hon. Lloyd Bentsen
U. S. Senate Office Building
Washington, D. C.

Dear Senator Bentsen:

As a native of Deaf Smith County who continues to own land settled by my parents in 1900, I have every reason to be concerned about the possibility of locating a repository for high level nuclear waste in the county.

Also, I think you can see from this collection of clippings of news stories on the issue that my concern apparently is shared by farmers, cattlemen, businessmen and other citizens of the county and the Panhandle. I realize that you have your own clipping service but I thought this arrangement of clippings from major newspapers of the state might be a convenience in "bringing it all together" for you.

It shows, I think, the deep concern of people of this area about what they think is ill considered and unjustified action on the part of The Department of Energy.

They think, and I agree, that locating the dump in Deaf Smith County would do irreparable damage to one of the most productive farming areas in the state and to the people of the Panhandle.

Despite what I believe to be uninformed and partly political mouthings by our junior senator, the people of the Panhandle have welcomed your commitment and that of Gov. White, Atty. Gen. Maddox and others to the anti-dump cause.

Thank you for your help as evidenced by the hearing in Hereford.

Sincerely,

Beulah Lee R. Carter

Beulah Lee R. Carter
2217 Peach Tree St.
Amarillo, Texas 79109

Hereford, Texas
February 7, 1985

Mr. Lee Fuller
S. D. 410
Dirksen Senate Office Building
Washington, D.C. 20510

Dear Lee;
So much has been said about the nuclear waste dump site in Deaf Smith County.
I would like to go on record in saying we don't need it; and we don't want it.
Please help us.
Sincerely,
Zella Mae Crump
P.S. Give my regards to your parents.
Z. M. C.

February 11, 1985

Honorable Lloyd Bentsen

Committee on Environment and Public Works

Dear Sir;

In regard to the Nuclear Waste Repository in Deaf Smith County, Texas, I believe that it should not be considered here.

First we cannot allow anything to possibly destroy or contaminate our Ogallala Aquifer. This water is used by seven states and is the backbone of agriculture in this prime farmland region. [illegible] the products of a repository will drastically effect our cattle, corn, sugarbeets, wheat and other crops grown here. Our land prices are down drastically since Deaf Smith was picked as a possible site. This will be a detriment to the state of Texas and neighboring states.

How can the United States Government spend a billion dollars just to test a site when everyone is trying to balance the budget when the other two sites are on federal land.

The D.O.E. has zero creditability here in Deaf Smith County. In relocating the new site, they have shown that their guidelines have been very unstable.

Sincerely,

H.D. Fowler

H. D. Fowler
Box 42
Wildorado, Tx. 79098

February 11, 1985

Honorable Lloyd Bentsen
Committee on Envirment and Public Works
Washington, D.C.

Dear Sir:

I am a life long resident and a fifth generation farmer and rancher of Deaf Smith County. Who is very strongly opposed to D.O.E. locating a nuclear waste repository here.

Pollution of the Ogallala and Santa Rosa Aquifer is the most important reason the respository can not be built here. The Ogallala is the largest fresh water aquifer in the United States and the nerve of anyone buring high level nuclear waste under it is insane.

Transportation is another danger that the people of Texas and other states that the waste is shipped through should not be subjected.

Economics is another reason the repository should not be placed here. The D.O.E. states that just to test the Deaf Smith location will cost in excess of one billion dollars. They said all three sights are just as safe. And when everyone is tring to balance the budget this looks like a good way to save a billion dollars.

The Department of Energy handling of the testing has shown that they cannot be trusted with a project which must keep the most dangerous material known to mankind out of the environment for ten thousand years.

These are just a few reasons why you as members of the Environment Committee should help the residents of Deaf Smith County, Texas stop the repository and all testing immediately.

Sincerely,

Bill Fowler

Bill Fowler
Rt. 1
Wildorado, Texas 79098

February 11, 1985
Honorable Lloyd Bentsen
Committee on Environment and Public Works

Dear Sir:

I would like to state that we cannot have a Nuclear Repository in Deaf Smith County, Texas.

The Ogallala Aquifer, prime farmland and the danger of transporting the waste are three reasons we cannot have the dump.

The billion dollars to test the Deaf Smith County site should be saved and used to help balance the budget. Please cut the D.O.E. budget allowance inorder to prevent this extreme waste of tax payers money.

Sincerely,

Lazelle Fowler
Box 42
Wildorado, Texas 79098

JIM D. FOWLER

To the Honorable Senator Harry Berkson,

It's hard to know where to start, there's so many reasons for not putting the Nuclear Dump in an area where farming & ranching are. Plus our underground water supply has a chance of getting contaminated. Do you have any idea what that does to us who farm, ranch and feed families? Most of the people in this area are affected by agriculture, if that Dump comes in here it will put so many people out of work, and the farmers are likely to go under. No one will accept anything they grow because there's a chance of contamination of the net work feeding the nation of our family. Why not put it in the desert where it'll harm no one?

There's also no guarantee that there will be no accidents in shipping the waste. A human life is more precious than anything, to take the risk, that Dump would bring. Just think what it would be like to have your family live next to a Nuclear Dump.

Yours, Jim Fowler

JIM TUTTLER

[illegible]

I need as many votes as I can get in calling a Nuclear Waste Dump [illegible] in Texas. One of the most important factors we are looking at is the transportation of the waste. Texas, which would be the site of the dump, is one of the most pleasant [illegible] in Texas.

[illegible]

February 11,1985

Honorable Lloyd Bentsen
Committee on Environment and Public Works

Dear Sir,

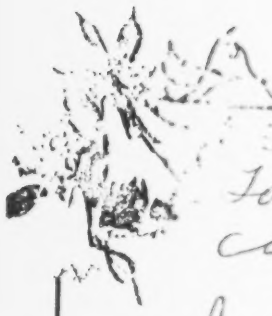
As a business in Deaf Smith County, Texas, I would like to go on record as saying that we cannot have a repository located here without bad effects on the entire region.

I have been in the water well business in Deaf Smith County for over forty years and I know from experience that things in the Ogallala Aquifer do not always run true to expectation. We cannot chance one of these leak hapenings to destroy or contaminate the life blood of seven states that get water from the Ogallala.

Our land prices have droped sharpely since the location was picked. Our crops, our cattle, and our businesses will all be badly hurt if we allow the repository to locate here.

Sincerely,

Fowler Pump Co.
Box 42
Wildorado, Texas 79098



Feb. 11 85

Senator Lloyd Benson and
To Whoom it may
concern

I am against the
nuclear dumping here
in the bread basket
of the panhandle.
I am also concerned
about ruining the
water supply that
why I drove down
to Amarillo to Complain.

Sincerely,
Alta Fay Johnson
11 14 Ridgecrest
Canyon Tex.
79015

7003 Amarillo Blvd. E.
Amarillo, Texas 79107
February 16, 1985

Lee Fuller
Committee on Environmental and Public Works
SD- 410 Dirksen Senate Building
Washington, D.C. 20510

Dear Committee Coordinator:

I am deeply disturbed that so little emphasis is placed on the eight-state size of the Ogalalla Aquifer, where the Department of Energy is concerned with costs, transportation distances, jsalt beds and so on.

At the hearing in Hereford February 11, in 2½ hours of listening to Sen. Bentsen, Agricultural Comm. Hightower, Sen. Bill Sarpaulis and others, the SIZE of the Aquifer was mentioned three times-- twice by Wayne Richardson and once by Frank Ford. They are Hereford businessmen.

Although there seems to be a natural bank in the underground formation at this time, can any geologist swear that there will be no changes in underground formation in 20,000 years? It changes all the time!

Why is so little emphasis placed on the size of one of the world's largest underground watersheds? Because few people even realize it is so immense. I intend to take articles from the local newspaper to the hearing, to show that perhaps 1 time out of 20, the area from the Black Hills of Dakota to Texas is mentioned. How are people to learn of the size of the Ogalalla Aquifer, when it is so seldom mentioned?

Since Washington State wants the high-level nuclear waste repository to add to their economic growth, repeal of the Nuclear Waste Policy Act of 1982 requiring that different sites be investigated would clear the way for establishing it where residents want it. It would also save millions of dollars now being spent on hearings telling residents in different areas how safe the site will be.

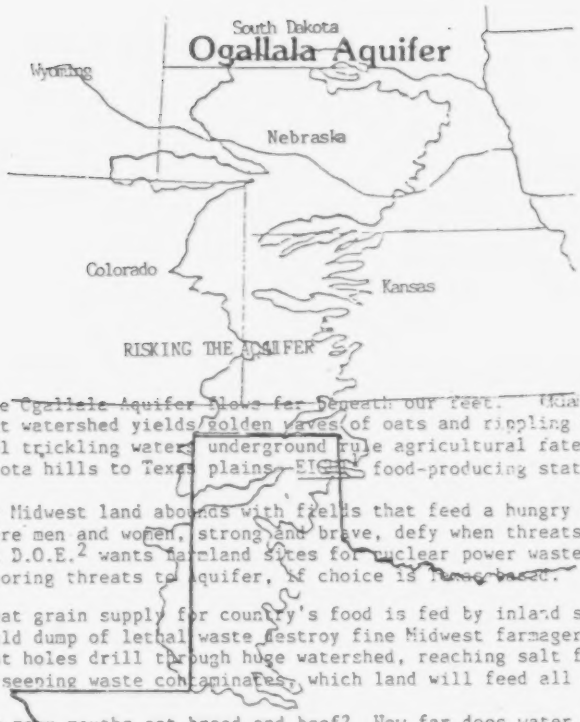
Our Government should be protecting water supplies with every resource it commands. Instead, the DOE is considering establishing a nuclear waste dump site smack in the middle of the aquifer that feeds much of the rich and productive farm belt of the midwest.

Sincerely,

Marianne McNeil

Marianne McNeil

Enc. Poem
"Risking The Aquifer"



Huge Ogallala Aquifer flows far beneath our feet.
Vast watershed yields golden waves of oats and rippling wheat;
Cool trickling waters underground rule agricultural fates--
Dakota hills to Texas plains, EIGHT[1] food-producing states.

Our Midwest land abounds with fields that feed a hungry world,
Where men and women, strong and brave, defy when threats are hurled.
Yet D.O.E.[2] wants farmland sites for nuclear power waste,
Ignoring threats to aquifer, if choice is Texas bread.

Great grain supply for country's food is fed by inland sea.
Could dump of lethal waste destroy fine Midwest farmagery[3]?
Test holes drill through huge watershed, reaching salt formations;
If seeping waste contaminates, which land will feed all nations?

How many mouths eat bread and beef? How far does water flow?
If toxic waste contaminates, where would our children go?
If leaks occurred in future years, what could D.O.E. do?
Two thousand years of barren waste, where rich farm crops once grew.

The thought appalls that government would dare to take a chance
Of risking waters crucial to immense farmbelt expanse.
Since other sites have salt bed caves, why RISK this watershed?
If eight farm states would die from waste-- how would this world be fed?

[1] Texas, Oklahoma, New Mexico, Kansas
Nebraska, Colorado, SDakota, Wyoming

[2] Department of Energy

[3] farmagery combines (coined word)
farmer
manager
mastery

Marianne McFarland McNeil
7003 Amarillo Blvd. E.
Amarillo, Texas 79107
Copyright 1983

Permission given to publish. Send copy to above address.

Northwest Texas Clergy and Laity Concerned

P.O. Box 5285 · Amarillo, TX 79117-5880

Advisory Board Members

Mary Emeny
Amarillo Unitarian Fellowship

Dr. Edward George
Professor of Classics
Texas Tech University

Rt. Rev. Scott B. Hulsey
Episcopal Bishop of
Northwest Texas

Marty Lavidder
High Plains Women's
Political Caucus

Most Rev. L. T. Matthiesen
Bishop of Amarillo

Dr. Darrell Munsell
Professor of History
West Texas State University

Rev. V. P. Perry
Mt. Zion Baptist Church

Rev. Arthur Preisinger
Lutheran Campus Pastor
Texas Tech University

Marcy Wenzler
Lubbock Friends Meeting

Rev. George Yates
United Campus Ministries
West Texas State University

Affiliations listed for identification only

STATEMENT ON NUCLEAR WASTE DISPOSAL IN THE TEXAS PANHANDLE

When nuclear waste began accumulating with the start of this country's atomic energy program, little attention was paid to the hazard it posed, and it was assumed that a technologically acceptable disposal method could be easily found. By the time the difficulties in dispensing of the wastes became apparent, huge quantities had already accumulated.

The radioactive waste management program originated as a by-product of the wartime effort to develop the atomic bomb. Nuclear reactors were constructed at the Hanford Reservation in Washington to produce plutonium which was then extracted from spent fuel. Reprocessing produced large quantities of radioactive waste, but under the pressure of the war effort, the time, money, and inclination to deal with it did not exist; nor did the technical ability to dispose of it safely. So it was neutralized and placed in "temporary" storage tanks.

Most of it--all except what has leaked out--is still there.

The Hanford plants turned out tens of thousands of pounds of weapons grade plutonium and generated almost fifty million gallons of liquid waste during their operating lifetimes. This acidic waste was neutralized and placed in single-walled carbon steel tanks.

In January of 1959, the manager of Hanford predicted that the storage tanks would effectively isolate the waste they contained for decades, possibly for as long as 500 years.

It was later discovered that a leak of 35,000 gallons had occurred several months before this confident prediction was made.

That incident is typical of this nation's nuclear waste management program.

In 1963, the Atomic Energy Commission began Project Salt Vault in Lyons, Kansas, to determine whether disposal of radioactive waste in salt was feasible. The project consisted of placing a small number of waste-simulating electrically heated canisters and some canisters of real waste in holes bored into the salt of an abandoned mine. When the heated canisters were removed from their holes, there were cracks penetrating halfway through the stainless steel walls, and there was heavy corrosion on the stainless steel conduits supplying power to the heaters.

The AEC did not pursue development of a disposal facility further until the late 1960s when, after a highly critical National Academy of Sciences Report and a serious accident at Rocky Flats near Denver, the agency decided to go ahead with disposal at the Lyons site. By 1971, preparatory work was considered complete, and the AEC was ready to begin implementing a solution to the waste disposal problem. The agency was so confident that, in 1972, Milton Shaw, director of the Division of Reactor Development, requested the entire $25 million for the facility rather than just that for a single year

But the Kansas Geological Survey, along with independent geologists, concluded that the Lyons site was wholly unacceptable. The geology of the site was inadequately known, and in the process of drilling small holes, water started leaking into the mine because one of many gas or oil boreholes in the area had been intercepted. Dr. William Hambleton of the Kansas Geological Survey described the Lyons site as "a bit like a piece of swiss cheese."

Under pressure from the Kansas congressional delegation, the site was abandoned in 1973.

Each instance of failure in the government's nuclear waste management program has been caused not only by technical problems but also by hasty and overconfident economic and political decisions.

Former Secretary of Energy James Edwards, commenting on the waste disposal problem, said, "Let's stop looking and start burying."

Is it possible that nuclear waste is destined for the Panhandle because this is a politically expendable region, or because--as DOE likes to say--it is "virtually uninhabited?"

People sometimes hesitate to challenge "experts," including those from the Department of Energy. But this is not merely a technical decision! It is an economic decision about the advisability of risking our rich agriculture for the convenience of the nuclear power and nuclear weapons industries, who are running out of temporary storage and seem to want a "permanent" facility regardless of the human and environmental costs. It is a political decision about who determines the use of land in the Texas Panhandle. It is a moral decision about our willingness to subject our children and their children for thousands of years to wastes that could result in tragic and irreversible genetic damage.

And it is a moral decision about our relationship to the world we live in. For many of us, this land is a gift to be cared for--not a possession to be used up. Plutonium, one of the ingredients of the high level waste that would be buried here, remains dangerous for as much as 500,000 years. Even by conservative estimates, it should be isolated from the environment for over 200,000 years. The entire history of human civilization is only about 9,000 years.

Are we arrogant enough to believe that our institutions--or our disposal facilities--can indefinitely isolate a material so deadly that, according to Dr. Helen Caldicott, one pound of it could induce fatal lung cancer in every man, woman, and child on earth? The Egyptians built the pyramids to protect the souls of their Pharaohs for eternity; we broke into them after several thousand years. Can't future civilizations be expected to do the same?

The time has come to ask not only whether we are willing to bury nuclear waste in the Panhandle but also where we are willing to bury it and whether we are willing to continue producing it in spite of its cost to ourselves and generations to come.

From the beginning, we have plunged blindly ahead assuming that a solution would be found. It hasn't. But we continue to plunge ahead. That course will only lead to disaster if it is not changed.

Prepared by Dr. Steven Schroeder, Director

STRANGERS AND GUESTS: SOME ETHICAL DIMENSIONS OF THE NUCLEAR WASTE PROBLEM

"...the land belongs to me, and to me you are only strangers and guests."
-Leviticus 25:23

God's reminder to Moses echoes through Old Testament accounts of slavery, exodus, and promise. The people of God are reminded time and again that their story is a story of deliverance, that their land is the gift of a gracious God. As we confront the by-products of nuclear power and struggle with the necessity of doing something with the waste that has been generated--and continues to be generated--by the nuclear industry and the military, we would do well to remember that word of God.

"This is a new problem," according to Henry Sooles, a senior technical advisor for the Department of Energy, "for no program has ever had to isolate hazardous material for thousands of years." It is a new problem, but it is not a problem that springs up unexpectedly in a moral vacuum! We have long and valuable traditions of considering our relationship to the world around us and how that relationship is affected by our relationship to God. As strangers and guests, we have a responsibility to look carefully at what we are doing to the land we occupy.

In the Judaeo-Christian tradition, that responsibility is dealt with at least in part by the retelling of the story of the exodus. The prophets addressed their own people, people who they saw as God's children, in terms that reminded them that they had been slaves, that God had delivered them, and that their land was a gift. In the book of Leviticus, the people are reminded that even the land is to "keep sabbath" to the Lord; it is to lie fallow every seventh year. That reminder, cloaked in terms of religious ritual, carries a force that goes far beyond the ritual itself. It is a command, an obligation, to look on the land as a gift to be used and celebrated rather than a possession to be used up and discarded.

Any attempt to "isolate hazardous materials" for thousands of years must be considered in that light. Are we caring for the land, preserving it for our children and their children--or are we using it up, rendering it useless, and abandoning it? The rich agriculture of this land is nothing less than a miracle. When people, including the Department of Energy, speak of it as "virtually uninhabited," we have to ask whether that displays adequate appreciation for the gift, the promisethat it represents.

In the book of Exodus, God describes himself as "a God of tenderness and compassion, slow to anger, rich in kindness and faithfulness;" but he goes on to warn that "he lets nothing go unchecked," that he punishes the parents' fault in their children and grandchildren "to the third and fourth generation." As we confront the necessity of isolating radioactive wastes for thousands of years, we should remember that image of punishment extending for generations beyond the person whose act is being punished. It is an image of consequences with a magnitude that we normally do not consider. Our sense of fairness tells us that people are responsible for their own actions, that they should expect to accept the consequences of those actions--whether they be good or bad. But the book of Exodus is aware--as we should be--that the consequences of actions often extend far beyond the actors.

Who will suffer the consequences of our commitment to nuclear power? Who will suffer the consequences of our decisions regarding nuclear waste? What does that say about our continued commitment to nuclear power?

The stories of exodus and promised land in the Old Testament serve as a constant reminder that we depend on a power greater than our own. Being reminded of slavery and deliverance is one way to keep that in mind. For us, the reminder comes in the form of a question: Can we live without nuclear power if our commitment to that power causes us to betray our obligations to one another as creatures of God?

Martin Luther said that our "god" is that in which we place our trust. That makes idolatry a more subtle problem than we might normally expect. We may be worshipping "gods of metal" even if we are too subtle and too sophisticated to bow down before images that we've made with our own hands. When we are told that we must have nuclear power or nuclear weapons--or when that is simply assumed, we are hearing a statement about the focus of our trust.

Since decisions about nuclear power, nuclear weapons, and nuclear waste are in the hands of our government, it is important to bear in mind the way in which our traditions look on government and the mutual responsibilities it entails. Paul tells us that governments are ordained by God to preserve order. In the context of the Judaeo-Christian tradition, this makes it imperative that government preserve the "order" implied in all those earlier statements about land as gift and the consequences of action. Government does not impose or create order; it is ordained to preserve an order created by God. It is entirely possible and--unfortunately--painfully common for government to pervert that order. One of our responsibilities is to remember that fact and remind one another of it.

In the tradition of the United States, this is most forcefully expressed in the conviction that the power and legitimacy of government flow from the consent of the governed. To say that these decisions are in the hands of our government is to say that they are in our hands.

The decisions are in our hands, but the future, like the present, is in the hands of God. We must make the decisions with the memory of slavery and deliverance fresh in our minds, with a vivid understanding that what we have is a gift and a trust, and with the knowledge that "nothing goes unchecked."

Radioactive materials emit rays and particles (the most important of which are alpha particles, beta particles, and gamma rays) that can cause chemical and physical changes in surrounding materials. Beta particles and gamma rays can travel several feet through air and penetrate several inches through many materials; alpha particles travel shorter distances, but are relatively large and can cause greater damage. Radiation damages living tissue whether it is emitted from sources inside or outside the body; even small amounts can cause cancers or birth defects. Radionuclides can enter the body through contaminated air, water, or food; the risk from these nuclides depends on the type of radiation they emit (alpha being most dangerous) and their chemical behavior (they may accumulate in specific parts of the body, greatly increasing the risk of cancer in those areas). All radionuclides gradually decay away at a rate indicated by their "half life." After one half-life, half the original atoms of the radionuclide remain; after two half-lives, one quarter remain; after three, one-eighth remain, and so forth. The table shows some characteristics of a few of the many radionuclides that may exist in radioactive wastes:

Name	Type of Radiation	Half-life
Tritium	beta	12 years
Strontium-90	beta	29 years
Cesium-137	beta, gamma	30 years
Radon-222	alpha, gamma	3.8 days
Uranium-235	alpha, gamma	71 million years
Plutonium-239	alpha	24,000 years

Clergy and Laity Concerned is an interfaith network of 50 chapters, action groups, and affiliates in the U.S., working with and through the religious community on peace and justice issues. CALC, which began in 1965, continues its work through two major program areas: Disarmament and Economic Justice, and Human Rights and Racial Justice.

Northwest Texas CALC facilitates responsible reflection and helps the community it serves translate religious and ethical values into action for peace and justice. Facilitating responsible reflection and enabling responsible action are educational tasks. We are here to provide resources--both in the form of information and in the form of questions to guide reflection-- and to serve as a community to sustain and nurture discussion as well as a springboard and support group for action.

Northwest Texas CALC offers a variety of audio-visual and other resources. For more information, contact:

Northwest Texas Clergy & Laity Concerned
P. O. Box 5880
Amarillo, Texas 79117

Timothy J. Revell,M.D.
907 East Park 364-8082
Hereford, Texas 79045

February 11,85

Senator Lloyd Bentsen
Senate Committee on Environment and Public Works
Washington,D.C. 20510

HEARING: 2-11-85- Hereford,Texas
RE: Nuclear Waste Dump in Hereford,Texas.

Dear Senator Bentsen,

My name is Dr. Timothy J. Revell,M.D.,907 East Park Ave. Hereford,Texas. I am a local General Practionier as well as the County Health Officer. I would like to make a few comments regarding the possible dump site in Hereford.

One reason this process is in such a mess right now, is that the D.O.E. has not followed the law. In May 1983, a D.O.E. hearing was held here in Hereford, comments were taken on an Environmental Assessment, but three of the seven areas to be commented on were directly related to the Guideline. These were not final until almost a year later,thus making that hearing, and all that has followed illegal,because the law was not followed.

The economic issues have totally been over looked. Our county health facility would be the closest, and most accessable,yet the D.O.E. has done no planning or even checked what our facility has in the way of services. We will need a new ambulance, and a new pulmonary equiptment as a minimum but that can be bought with just money. The personnel to operate that equiptment is not so easy to come by,because of our relative isolation in West Texas. I have been trying for one year to recruit another physican for Hereford, and still have yet to find one. According to the D.O.E., we need just one more physican, but since they have not talked to anyone, they do not know that one is leaving this summer.

Timothy J. Revell, M.D.
907 East Park 364-8082
Hereford, Texas 79045

Continued:

We will need at least three more E.M.T's(Emergency Medical Tech.) to give twenty-four hour coverage to the dump site. These people have to be trained and then kept on staff. If we are characterized,this only three months to find and train these people.

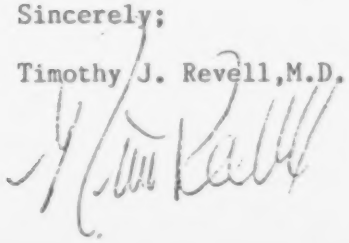
Another problem that has been over looked is the effect of the salt on the surrounding farm land. With our winds this will be a significant health hazard, as well as causing the surrounding farm land to be sterile. The D.O.E. plans to experiment with different methods of containment during the site characterization phase, but the surrounding farms will have an increasingly hard time making crops come up in salt contaminated soil. This will bring increasing economic burden on the already failing farm economy and cause this area to fall to ever increasing hard times.

I would encourage you and your committee to mandate that the D.O.E. return to the drawing board and elimate Hereford,Texas from all further studies for this Nuclear Waste Dump. They are spending money needlessly here because Nuclear Waste and food products do not mix. Their methods of examining potential problems are sloppy and inadequate from a scientific view point, and the disclaimer which I have enclosed that is printed on the inside cover of each of the research papers I receive leads me to have grave misgivings about the contents.

The D.O.E. thinks any problem can be solved with money, but it cannot bring back an aquifer after it is contaminated,crops to sterile pieces of farmland, or trust in the Federal Government when all we see is hair brain ideas to freeze the aquifer in order to drill through it, and bureaucratic bungling that has been common place with the D.O.E.

Sincerely;

Timothy J. Revell,M.D.



1101 Jackson St., Apt. 5
Amarillo, Texas 79101

Feb. 7, 1985

The Honorable Lloyd Bentsen
Hereford High School - 710 Avenue
Hereford, Texas

Dear Senator:

We were not able to attend the hearing set for Feb 11th at Hereford; but we would like to add our names to the list of those who oppose the waste site on the finest Agricultural land in the country.

Our very lives depend on keeping our underground water aquifer unpolluted. The plans we have seen to believe it would be safe, except the government's promises and I am sure you remember the Union Carbide Co. assured the Indians the same thing.

For God's sake help us!

Yours truly,
Francisco & Beulah Rodgers

Box 24 Pagel
Dacon, Texas
Feb. 11, 1985

Senator Lloyd Bentsen
Dear Senator,

I, Mrs. William Kimberley and Billy Kimberley are concerned for the well-being of our great nation. Since the Deaf Smith area is such a vital part in the well-being of our nation, we are very concerned what would happen to our area. Deaf Smith has underground water and we produce all kinds of grain, vegetables and livestock. We must have water and food to survive. We are a caring people, working long hours and working hard here in the Deaf Smith area. We are against the Nuclear waste dump being located in the Deaf Smith Area.

We are concerned about the possibility that the Ogallala Aquifer being contaminated, thus endangering the only major water supply that we have. The underground

water supply through the center of the United States could also be contaminated. We must have water to live.

Other concerns include: There is the possibility of accidents in transporting nuclear waste. Accidents do happen.

There is the loss of valuable land and needed farm land. Already highways and cities are taking so much good land.

The value of land has declined because of the fear of a nuclear depository.

Food factories are already considering moving. Consider the fact that laws are strict and becoming very strict for using various kinds of sprays on farm products even to the point of condemning some. Now consider how much more serious the problems created by a nuclear high-level waste repository would be. It could be disastrous.

We do not want a nuclear waste repository.

We would like to see research on a big scale to study for a way to restore nuclear waste to useful products.

Sincerely,

Mrs. William Kimberley IV

Billy Kimberley V